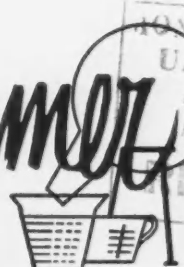


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MARCH 1957

THE MAGAZINE OF TASTE AND SCENT



Fat Emulsion . . . Page 37 • Savin Oil . . . Page 45

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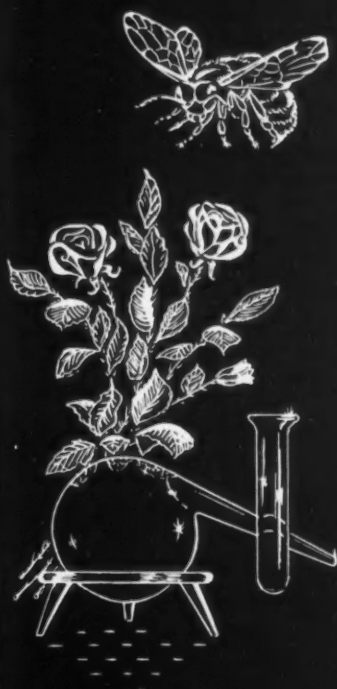


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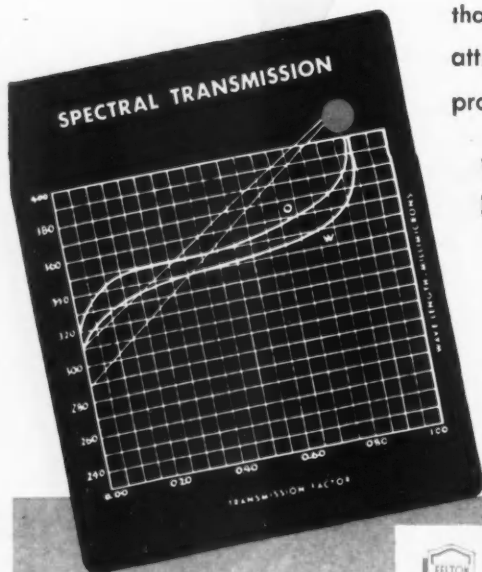
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MARCH 1957

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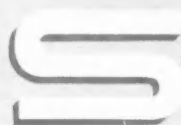
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MINUTE NEWS . . .

Bottled Soft Drinks are Safe After Atomic Explosions

Bottled soft drinks can serve as an emergency source of potable water immediately after nuclear explosions according to tests at the Nevada proving grounds of the Dept. of Defense. Bottled soft drinks spotted as close as a quarter of a mile away from an atomic explosion showed very low radio activity. Although the containers, glass and metal, showed some induced radioactivity after being exposed to the test explosions none of the activity was transferred to the contents. Laboratory examinations after the tests showed some slight loss of color and a possible aging of the flavor but the drinks were palatable.

Fruit Flavored Tablets to Produce Carbonated Drink

A fruit flavored tablet that produces a mildly carbonated soft drink when dropped into a glass of water has been launched by Fizzies Beverage Co., a subsidiary of Emerson Drug Co. which is a division of the Warner-Lambert Pharmaceutical Co. Each tablet is individually packed in a polyethylene envelope and the price is 25 cents for a perforated strip of eight tablets. Four flavors are offered: cherry, grape, orange and lime-lemon.

Hazel Bishop Inc. Suffers Loss from Christmas Returns

The high cost of returns on Christmas merchandise sold in 1955 was responsible for the net loss after tax refunds, of \$610,259 for the fiscal year ended October 31, 1956 of Hazel Bishop Inc. according to a statement to stockholders. Net sales were \$10,270,994. Sales expenses have been reduced by cutting down the sales force from 56 to 11. The company has also returned to its old program of working through drug wholesalers.

Fragrance Foundation to Launch Educational Programs for Stores

The Fragrance Foundation is to launch special educational programs for store relations, member relations and public relations in the coming months. Hitherto 85% of its educational material was directed to consumers and the remaining 15% to the trade. The purpose of the new plan will be to increase store awareness of the fragrance potential; to aid in training sales personnel and to enlist greater store cooperation in promoting sales of fragrance products.

Ageing of Perfumes Accelerated 100 Times by Ultrasonic Waves

A group of chemists in the Research and Product Development Department of the Rexall Drug Co. by applying ultrasonic waves according to specially devised techniques has found that the ageing process of perfumes and colognes can be accelerated as much as 100 times. In addition they report it has been established conclusively that fragrance products on which ultrasonic waves have been used are better blended and fuller bodied. Furthermore it is reported their "lift" and lasting qualities are also greatly improved with the harsh alcohol note subdued. The research scientists active in the project include Dr. H. S. Rudzki, S. Prussin, G. Lieberman and Miss M. Duffin. Results of their findings will soon be applied on an industrial scale by the company to bring about outstanding improvement in the company's cosmetics.

Bath Foam to Kill Odor Making Bacteria Introduced

A bath foam claimed to soften hard water and to destroy odor producing bacteria has been launched by California Western Sales, Los Angeles 26, Calif. It is called Champagne Foam and comes in an 8-ounce glass container and retails for \$3. It contains an ingredient called Deofoam which is said to kill the bacteria and serve as a cleanser for acne troubled skins. It may also be used as a shampoo.

Woman Offers Bill in Congress to Aid Testing of Additives

Mrs. Leonore Sullivan, representative in Congress from Missouri has introduced a bill in Congress identical with the Delaney bill to provide for the testing of chemical additives before their use in cosmetics or foods. The idea in introducing the bill was to make women conscious of the need for the proper testing of chemical additives before cosmetics are offered for sale.

**Scent to Last 100 Years Sealed
in Time Capsule by Governor**

Because of a new product called Permascent, an emulsion that combines perfume with a solidifying agent that hardens when exposed to continuous air currents, residents of New Jersey one hundred years hence may be able to enjoy the scent of 1957's roses, according to Jackie Enterprises, 50 N. Long Ave., Chicago, Ill. A sample was locked and sealed into a time capsule by Gov. Robert B. Meyner of New Jersey in ceremonies at the State House in Trenton, N.J. on February 5. Built-In-Age Inc., Newark, N.J., sponsors of the project—which included articles from other manufacturers in addition to Permascent, announced that the capsule will be deposited on the site of the Built-In-Age Architects Display Building on Route 22, Mountainside, N.J. and provision has been made for reopening the capsule in the year 2057. Permascent was developed by Jackie L. Heller, founder and president of the company that bears his name. Under ordinary circumstances, he reports, the normal application of Permascent will be potent for 18 months, about four times the life of a normal sachet but in the sealed capsule it is believed that the aroma will last 100 years.

**T. G. A. Convention in New
York May 7, 8 and 9**

The twenty-second annual convention of the Toilet Goods Assn. will be held May 7, 8 and 9 in the Waldorf Astoria hotel, New York City. The annual golf tournament will be held at the Winged Foot Country Club, Mamaroneck, May 6. The convention is closed to non-members of the association; but the golf tournament is not restricted as to attendance. It is urged by the association that all members make their hotel reservations well in advance of the convention.

**Flavor Chemists to Hold Flavor
Symposium in New York May 22**

The Society of Flavor Chemists will hold a luncheon to be followed by a Flavor Symposium in the Roosevelt hotel, New York, May 22. The following will be among the speakers: Dr. J. H. McGlumphy, van Ameringen-Haebler whose topic will be "The Application of the Maillard Reaction in Development of Flavors"; James Broderick, Lever Bros. Co. who will discuss "The Origin of Flavor"; Ernest Polak, Polak's Frutal Works who will speak on "The Biosynthesis of Essential Oils." A panel of flavor experts will be available to render advice on flavors for use in beverages, ice cream, candy, bakes goods, spices, etc. Representatives of flavor and allied industries are invited to attend. Full information and luncheon tickets may be had from Fred Schumm, Ungerer & Co., Totowa, N. J., who is secretary of the Society.

**Dr. Ernest Guenther Surveying
West Indian Essential Oils**

Dr. Ernest Guenther, vice president and technical director of Fritzsche Brothers Inc. is making an on-the-spot survey of essential oil production in the rapidly developing West Indian and Caribbean areas. He expects to return this month with a complete pictorial record of his trip. On his return he will give a series of illustrated lectures. The first will be given at McGill University in Montreal April 9 for the Canadian Food Technologists. Others will be before the National Research Council at Ottawa and the last before the Cereal Chemists of Canada. The Canadian lectures will feature the production of essential oils in Europe and North Africa.

**1956 Broke Record in Sales
of Soaps and Detergents**

Americans purchased more soaps and detergents during 1956 than in any other year of record. According to the Sales Census conducted by the Association of American Soap & Glycerine Producers, Inc., seventy-five manufacturers, representing a high percentage of the industry volume, reported total tonnage sales of soap and synthetic detergents in 1956 amounting to 3,975,439,000 pounds, an 8.4% increase over 1955 and exceeding any previous year for which records are available. Dollar sales for 1956 totalled \$913,532,000 up to 6.1% over 1955.

Sales of synthetic detergents, solid and liquid, now 67.7% of the market, reached a new high with a tonnage of 2,690,327,000 pounds, 16% above 1955. Dollar sales amounted to \$597,441,000 up 10.4% over 1955.

The rapid rise of liquid synthetic detergents continues. 1956 sales of 259,656,000 pounds was 69.7% above 1955 with a dollar value of \$102,969,000 up 41.9% over 1955.

Soap sales, solids and liquids for 1956 were reported at 1,285,112,000 pounds, off 4.8% from 1955. Dollarwise these sales in 1956 totalled \$316,091,000 as compared to \$320,068,000 in 1955, a decline of 1.2%.

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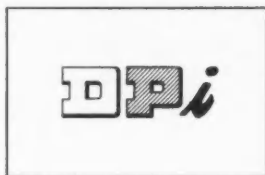
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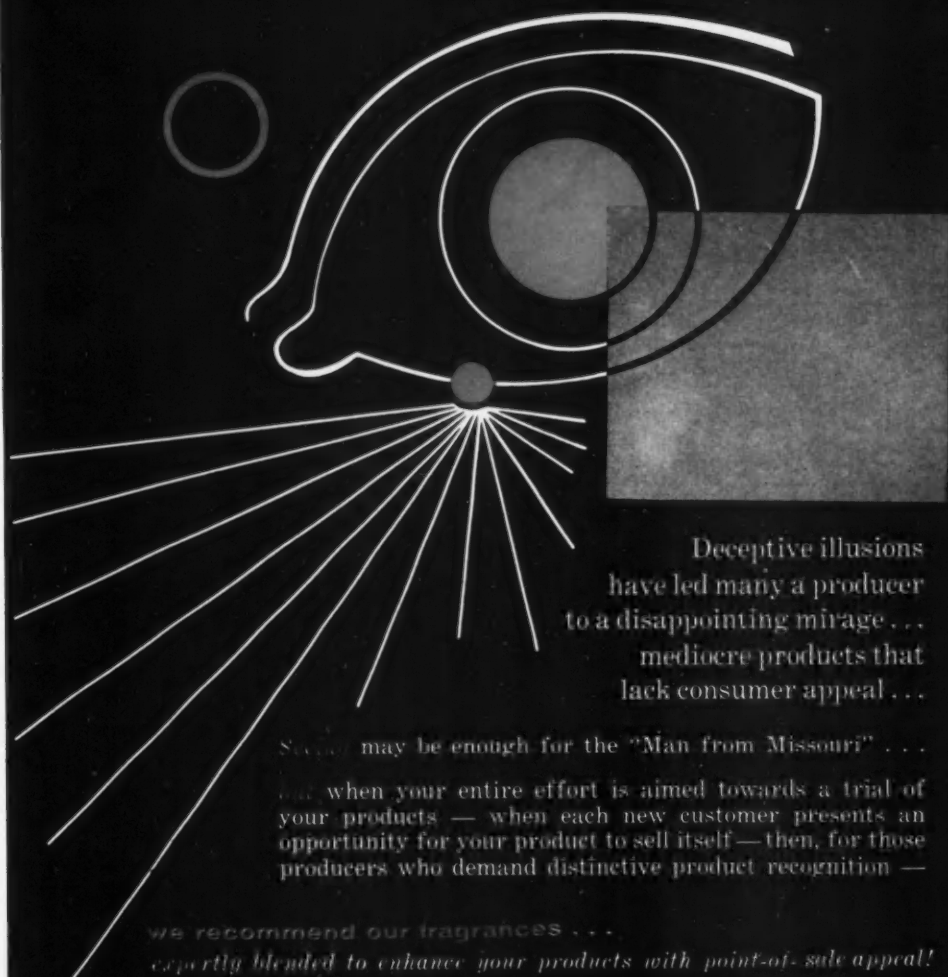


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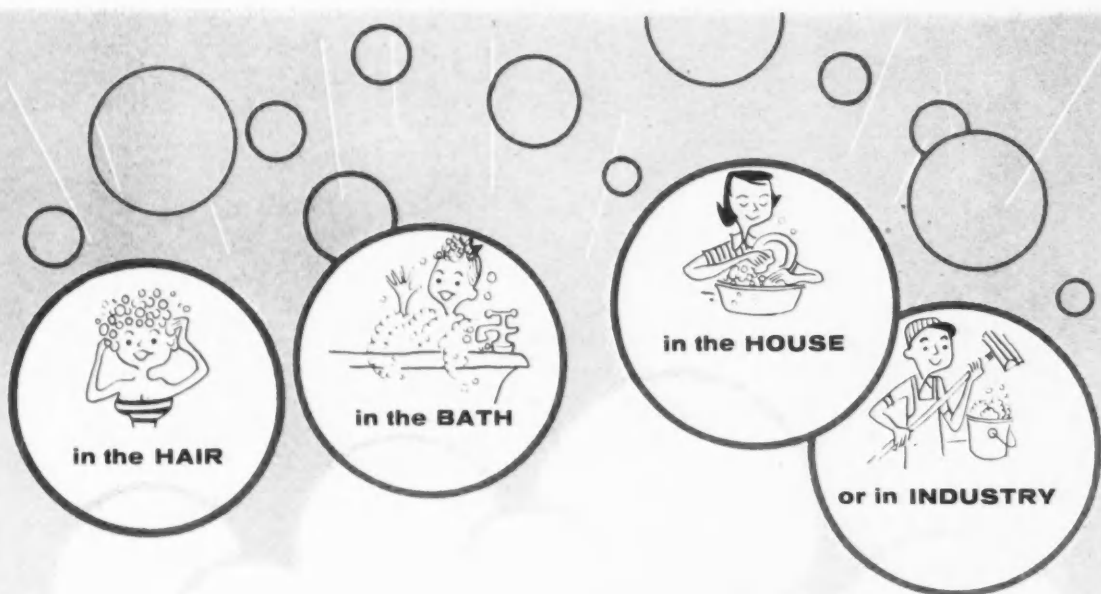


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THE CHINESE MERCHANT PRINCE

In a far-off land a merchant prince by the name of Fray Grins had received all three blessings . . . he was wealthy, healthy and wise. His sons went to the best schools, his daughters married the most eligible men, his wife had the most sparkling jewels, and he, himself, collected rare editions of esoteric books.

Fray Grins' wealth came from the manufacture and sale of perfumes. His packages were masterpieces, his perfumes were known throughout the world, and the wealth of Fray Grins, like the proverbial Break-The-Bank, grew and grew, and grew. But all things must end and so, too, did his life at the august age of eighty four less two moons. His eldest son took over and decided that profits must be larger. A little less perfume here, a little

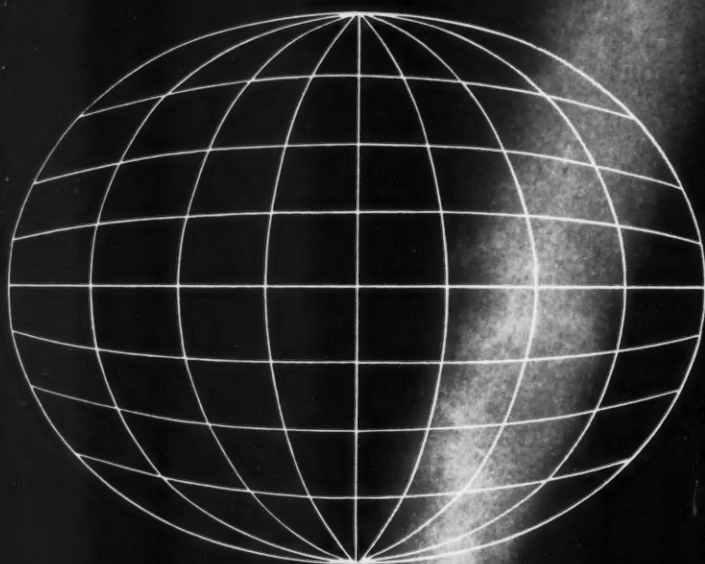
cheaper oil there and "qui sait" as the French say.

The firm of Fray Grins no longer bought from the best houses. Then they no longer bought from any house—they went out of business. And the sparkling jewels and the rare editions were sold to the highest bidders.

. . .

If there be a moral to this tale we would conclude that it is "Shortcut in Quality is False Economy". . . Yet we would be bold to say that at Syntomatic we feel there is a practical parallel in combining top quality with true economy. Prove it? Our pleasure . . . Syntomatic Corporation, 114 East 32nd Street, New York 16, New York. MUrray Hill 3-7618.

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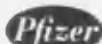
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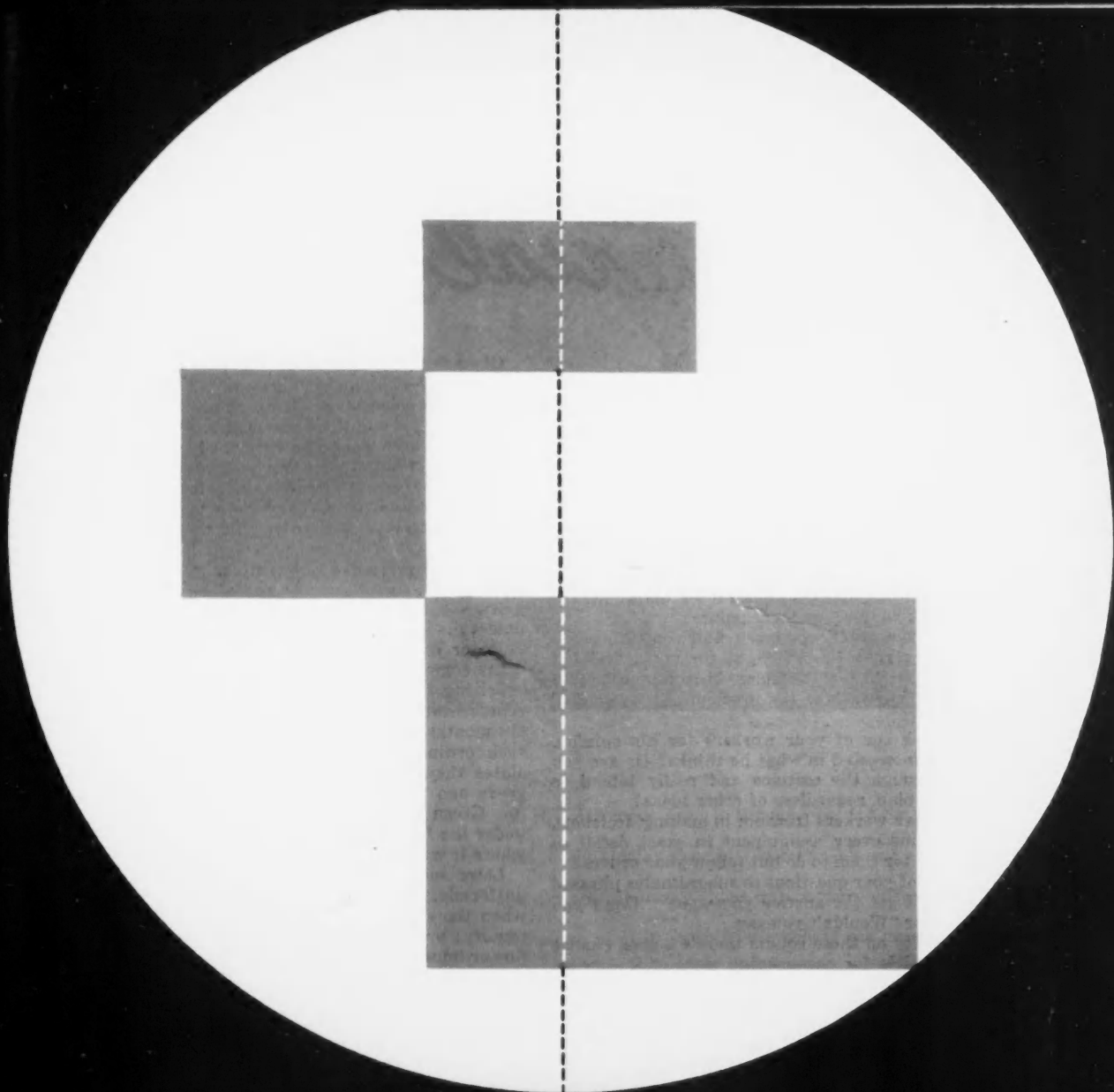


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Editorials...

No "Yes-Men" Wanted . . .

There is food for thought for employers and executives in top positions in a short article published in the skilfully edited "Executives' Digest" of the Roland G. E. Ullman Organization. It abstracts the essence of an article by Edward C. Kellogg as follows:

What most enlightened bosses want in a subordinate is a man who will keep him posted on what's happening, a man who will have guts to speak up when he thinks a mistake is being made, a man who isn't afraid of his job. If you feel that some of your people are becoming rubber stamps, the fault may be with you rather than with the employees. Check yourself on these points:

- 1) How do you react when you find something has gone wrong? Is your first thought to try to find out who's responsible, to put the blame on someone, rather than concentrating on how the problem can be worked out?

- 2) If you ask one of your workers for his opinion, are you really interested in what he thinks? Or are you only going through the motions and really intend to carry out your plan, regardless of other ideas?

- 3) Do you give workers freedom in making decisions, or do you outline every assignment in exact detail so there's nothing for them to do but follow your orders?

- 4) Are most of your questions to subordinates phrased so that you will get the answer you want: "Don't you think . . . ?" or "Wouldn't you say . . . ?"

If you're guilty on these counts there's a good chance you are responsible for encouraging some of the people under you to become rubber stamps.

Ordinances Plaguing Door-to-Door Salesmen . . .

Door-to-door selling is big business in the United States today with an annual volume of around ten billion dollars. There are about 7,000 companies that sell their products by this method. Standards of practice adopted by the National Assn. of Direct Selling Companies provide for fair dealing with consumers; prohibit misleading methods of approach to a sale; and insist that merchandise must be truthfully represented as to quality and price. That these standards of doing business are faithfully followed is evidenced by the fact that of all the complaints received by the Better Business Bureau in a six months' period only 1½% involved direct selling companies.

In the cosmetic field there are numerous companies which sell their products from door to door. The largest one is 71 year old Avon Products, Inc. It employs managers in cities of 75,000 or over and in rural areas. The managers carefully select suitable sales representatives, train and supervise them. The great organization is skilfully managed, employees all down the line are generally happy and the total volume of sales runs high in the millions of dollars. There are others which likewise are well managed; and all told the direct selling companies in the cosmetic industry have contributed to the growth of the industry, introducing in many instances products which otherwise would probably not be on the market.

Obstacles to companies selling direct to consumers are multiplying—Greenwich, Conn. is the latest of the communities to enact more stringent ordinances to hamper direct selling—and there are others. An example of how such ordinances work was furnished this year in Green River, Wyoming where two men were arrested there while giving away free packages of soap made by the Procter & Gamble Co. They were merely giving them away to interest housewives in the merits of their products.

About 20 years ago Green River passed an ordinance making it a misdemeanor for a person to go into a private residence for the purpose of selling merchandise unless the salesman had been requested to make the call. More or less similar ordinances have been enacted by many communities. The Rye, N. Y. ordinance prohibits soliciting in any form except by charity organization representatives who have resided in the community for six months. The highest courts in 11 states have held such ordinances to be unconstitutional; in six other states they have been ruled constitutional. About five years ago the United States Supreme Court held that the Green River ordinance was not unconstitutional under the federal constitution—thus leaving the statute where it was before.

Laws such as these ordinances are rarely enforced uniformly. Very often the police overlook the provisions when the salesman is a respected member of the community; but if a stranger does the same thing he faces fine or imprisonment. In other words the law is enforced to suit the fancy of the municipal officials.

Unquestionably it is often difficult to sell from door-to-door; and unless some means are provided to stem the rising tide of ordinances in this category the situation may become intolerable. Meeting half way the desire of municipalities that insist on exercising some control over direct selling salesmen, perhaps a model statute, drafted by the association of direct selling companies, supported by well considered publicity, might serve the purpose of influencing the enactment of "live and let live" legislation. The surest remedy for harmful legislation is sound legislation.

Threat of a Return to Prohibition . . .

While two bills submitted to the last Congress to prohibit advertising of liquor in publications going across state lines were not enacted into law at the last session, it is possible that they may be introduced during the present session. If either should become law the United States will be one step nearer to Prohibition.

Prohibition was a means whereby emotionalism and fanaticism joined to compel everyone to conform to one group's idea of what was proper. Like almost every other intrusion on liberty it was done on the score of "protection." The prohibitionists—who caused misery to the toilet goods industry from 1919 to 1933—believed that by forbidding the manufacture of liquor unfortunates would be protected against the evils of alcoholism. That is like suggesting that we outlaw marriage so as to end divorce.



A FRITZSCHE "EXCLUSIVE"

Pictured on the opposite page—by courtesy of the American Museum of Natural History—is a small fragment of one of Africa's great jungles. Here beneath the spreading fronds of giant, lace-like ferns, patterned in sunlit silhouette against the dark and eerie depths, lie some of nature's most exciting mysteries. Of these, none, perhaps, is more fascinating than the invisible and, indeed, inexplicable billions of tiny organic distilleries whose constant ferment wafts a rare medley of delicate, earthy scents upon the forest air. Were it possible to gather and concentrate these precious woodland odors, we suspect the result would be not too unlike our laboratory's latest and most striking fragrance. FLORAMOSS is, truly, something *very* special. It represents a unique blend of light, brilliant florals to which has been added a fresh green character for modification. The resultant effect of this combination with other additives is an attractive bouquet of intense sweetness and appeal. Woody base notes may be detected as may be also a trace of citrus which, with the green effect previously noted, lends attractive freshness to the composition's whole. FLORAMOSS is a strong, heady, provocative fragrance. It is unlike most aldehyde type perfumes, for although it has tremendous lift, that quality has been achieved without employment of the usual aldehydic constituents. Excellent fixation gives it a tenacity found only in the finest compositions. . . . We are proud to present this fragrance and strongly urge that you write us now, while still fresh in mind, for a FREE test sample of beautiful, new, long-lasting FLORAMOSS.



*T*HIS Automatic Electric Balance—part of the standard equipment used in our Quality Control Laboratory—is one of the most modern and accurate laboratory scales manufactured today. We show it here because, to us, it is symbolic, not only of the fine tolerances and high standards that govern our day-to-day laboratory and manufacturing operations, but of the care and efficiency that characterizes every department of our organization, from the purchase, control and storage of raw materials to the order-handling, filling and shipping of customers' supplies. Obviously, it is the customer who gains most immediate benefit from such practices, but in the long run we, ourselves, are the real beneficiaries because we have the fine satisfaction of knowing that, all down the line, we have performed even the smallest of our tasks in a manner that will bring utmost satisfaction to those who use our goods.

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Yes, that is what medicine is doing these days for lots of people, both young and old . . . it's making them feel real good all over. Fact is, the health and well being of our nation has never been higher than it is now, thanks in large measure to pharmacy's dramatic and highly successful contributions to the control of sickness and disease. In fostering the wider use of their oral products, pharmaceutical manufacturers have recognized the fact that palatability is an advantage not to be disregarded, and they have wisely relied upon the specialized knowledge of firms like ours to give them guidance in the solution of their many complex medicinal flavoring problems. To assist in this purpose, we have recently compiled a 52-page PHARMACEUTICAL FLAVOR GUIDE which we shall be glad to send to any drug manufacturer upon request. For a FREE copy of this Guide, please address us on your letterhead.

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Baldness

An interesting and short digest of Alopecia in its major forms is written by Thomas in *THE PRACTITIONER*, 178, 251 (1957). One observation is that the use of nicotinic alcohol, a vasodilator, has no effect on male baldness. The statement is not supported by further data.

The author also notes that hair grows in alopecia areata, totalis and universalis following oral treatment with cortisone. However, the hair comes out when cortisone therapy is stopped. Furthermore, the dosage necessary is far too dangerous for long-term use.

New Soap Antiseptic

Now being offered is 3,4,4-trichlorocarbonyl, an antiseptic for soap to be used preferably in a 2 per cent concentration. The material is reputed to make soap whiter. Supplied as air-milled material, it is readily incorporated into soap. Fresh soap samples seen look interesting.

Blondes

A couple of researchers at the University of Oregon Medical School tie together light hair and mental disorders. The find that lightness of hair and skin are the result of a metabolic breakdown releasing excessive phenylalanine. When large amounts of tyrosine are fed such patients, hair becomes darker. More than three fourths of

those examined having this excess of phenylalanine (phenylketonuria) have light hair and complexion.

Now if we can find out why hair turns gray and how to stop it, we will have something.

Viscosity Converter

The Interchemical Corporation has devised a slide rule for converting Ford cup viscosity to Stokes or centistokes. The Zahn Viscosimeter works along the same line as the Ford cup. Those using the Zahn instrument can probably work out a conversion chart of their own, having the present slide rule.

Secondary Effects of Cationics

A paper competing in the 1956 Intersectional Contest of the A.A.T.C.C. presented at the Perkin Centennial celebration last fall, was published in the January 28, 1957, issue of *THE AMERICAN DYE-STUFF REPORTER*.

There are a few interesting comments in this paper which may have application to human hair. The subject of the paper is self-explanatory, namely, "Cationic Softeners—Their Secondary Effects on Textile Fabrics." Wool is among the fabrics examined. It is needless to point out that results on hair may parallel those on wool. One of the remarks indicated a loss in strength of wool as a secondary effect.

Of course, human hair is not "processed" in the same way as is wool, but perhaps this point among others should be further examined.

New Yellow-Orange Colors

It was not unusual to learn that one of the crude drug houses has come through with a series of colors based on the natural material Annato, a seed long used for coloring foods and pharmaceutical preparations.

The series of colors derived from this basic material vary in shades from light yellows to deep reddish oranges. The coloring matter is available as oil or water soluble. It is interesting to note that oil soluble coloring is not sensitive to alkalis. They are, however, a little susceptible to color change in acid media.

The water soluble yellow colorings are most stable in neutral to alkaline media, pH running from about 6.5 to 13. In weakly acid solutions the colors tend to become more pink. With this change, shades can sometimes be properly adjusted to that desired.

At this writing six different types are available, three are oil soluble and three are water soluble. Actually this is one of the most exciting recent things that has happened.

Notes

Under the name of Rezone a far western company now offers a series of ion exchange resins. . . . A new hair setting gum for possible use in aerosols is reputed to be on the way. . . . Looks like another company is going to be making sorbitol, at first for its own captive use . . . which reminds me of sugar esters—heard more about them recently and can't wait to see them.

Aromatic Products, Incorporated

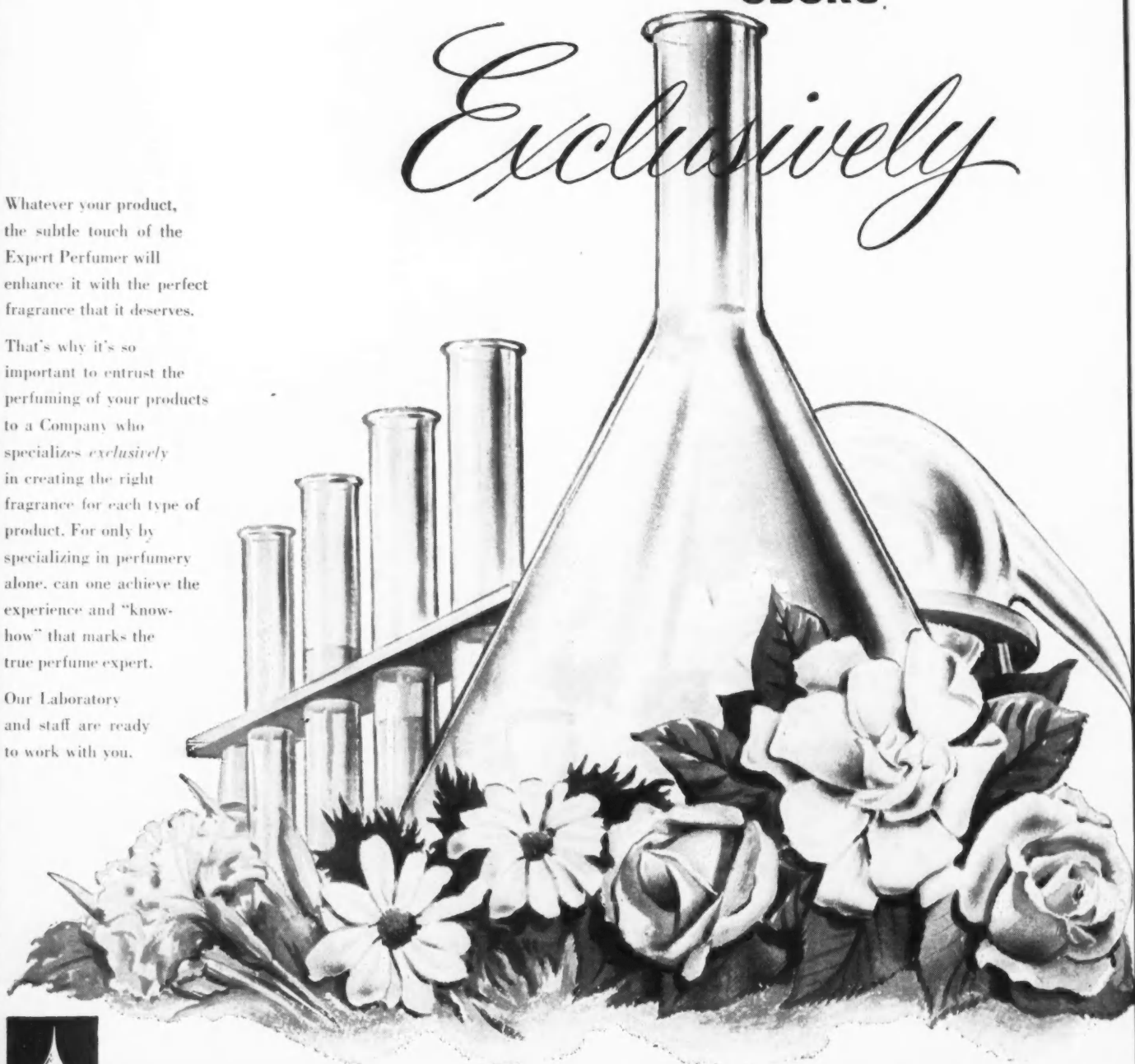
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. . . My own experimental work indicates that you can't write off DHA as a preservative—you will undoubtedly be hearing more about it. . . Glycerine is putting up a good fight in what looks like a slipping market to me. . . . The next American Pharmaceutical Association Convention is the week of April twenty-eighth in New York City—there are increasingly more papers given on subjects of cosmetic interest . . . with the inactivation of many common preservatives by nonionics . . . seems to me the preservative field is wide open again. . . . The aerosols have to come up with new approaches on cosmetics before they jump again—The metered valve and larger container are OK, but we need something else—not all cosmetic products are exciting as aerosols in their present form.

Brooklyn College Will Give Pharmacy Administration Course

A graduate course in pharmacy administration has been added to the course of study presently offered by the Brooklyn College of Pharmacy of Long Island University. It is said to be the only graduate course in the subject in New York State. Classes, which will be held in the evening hours, are scheduled to begin in September.

Waterless Skin Cleaner Rated Excellent, Says Manufacturer

The G. H. Packwood Manufacturing Co. has announced that in a report recently concluded by the U. S. Public Health Service on the "Evaluation of Waterless Skin Cleaners," the only cleaner to receive a rating of "Superior" was Pax, a pharmaceutical grade cleaner manufactured by Packwood. The firm says that the cleaner is coded as G-7 in the report.

Rayette Expands Its Merchandising Division

Rayette, Inc. has expanded its merchandising division to include two separate sales and service divisions, one for equipment and one for hair products. The new organization also includes a market research department.

The new Rayette equipment division, claimed by the company to be the industry's most complete salon equipment sales and service department, includes a sales manager, an equipment sales servicing manager, three regional sales service managers, and a corps of equipment service men, now being trained to move into the field. Robert Beaurline has been appointed equipment sales service manager.



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Q UESTIONS & A NSWERS

1229: COLD WAVING SOLUTION

Q. *I want to make a cold wave solution with a buffer other than the usual ammonium carbonate type. I believe that a borate buffer has been used for this purpose. The usual instructions for such a buffer as listed in the U.S.P. include potassium chloride with the sodium hydroxide and boric acid. What is the function of the potassium chloride? Can it be dispensed with? What other buffer systems may be used? Is there a good review of the recent developments in such buffered thioglycolate solutions? A. C. T., Mississippi.*

A. It is possible that there is ammonium carbonate in some of the cold waving solutions. This may be due to the fact that ammonium carbonate is used by some to neutralize part or all of the thioglycolic acid and bring it to the desired pH. Urea has also been used, but to our knowledge, no borates have been widely employed. Monoethanolamine is currently finding some vogue. As far as U.S.P. buffers are concerned, these are for special solutions and have no direct application to your cold wave solution. All we can tell you regarding reviews of the recent development in buffered thioglycolate solutions is that you should go to a large public library, and spend a day there going over the various publications.

1230: GALLATES AND TWEENS

Q. *Could you tell me if the gallates are a better emulsifier than the Tweens, and also if there is an odorless type of Tween for use with foodstuffs? Do you consider Vanitrope, manufactured by Shulton, Inc., of special interest to the essence manufacturer? C. O. T., Australia.*

A. The gallates are not emulsifiers. The Tweens are. The gallates are antioxidants only and tend to discolor in white emulsions. They are practically odorless. The Tweens, however, present a little bit of a problem although certain ones are fairly tasteless and odorless as far as foodstuffs are concerned (a special flavor grade of Tween known as Tween 60SD can be used in foods and flavors). To our knowledge, the Tweens are being used in the flavor industries. Offhand, we suggest that you use one of the laurates or palmitates. As far as Vanitrope is concerned, this is exciting more interest among flavor manufacturers in the United States, and we feel that more and more of them are adapting it to their products.

1231: FINGER WAVING SOLUTION

Q. *We plan to make a quick-drying finger waving lotion to be sold to beauty shops, and want to use specially denatured alcohol, water and polyvinylpyrrolidone. We understand it is advisable to use a small percentage of bleached shellac to prevent stickiness. Inasmuch as we do not plan to package the product in a pressure can, we wonder if a satisfactory one can be made without polyvinylpyrrolidone, just using alcohol, water, bleached shellac and borax or triethanolamine. Also, do you know if mink oil is commercially available? W. O. L., New York.*

A. It would be possible for you to make a quick-drying finger waving solution with polyvinylpyrrolidone and bleached shellac. However, keep in mind that an alcoholic solution dries very quickly and furthermore, polyvinylpyrrolidone tends to wet back a little, particularly in humid weather. Lanolin fractions and polyol fatty esters are also helpful. There have been products made with PVP/VA copolymer bleached shellac, borax or triethanolamine without the use of PVP and without the use of much alcohol but making largely a water solution. These formulas have been published in the AMERICAN PERFUMER in the past, and we are sure if you have any back issues, you can find such formulas in the question and answer department. If not, please let us know. Mink oil is commercially available. It is supplied by Walter L. Christman, Bloomfield, Colorado.

From time to time suggestions have been and will be made in this magazine with respect to processes, devices, materials, appliances, equipment and the like. It is not practicable for the writers and editors to have a patent search or examination made in connection with each such suggestion. Our readers are, therefore, requested and indeed urged to determine for themselves whether any patent or other right will be violated before acting on any such suggestion.

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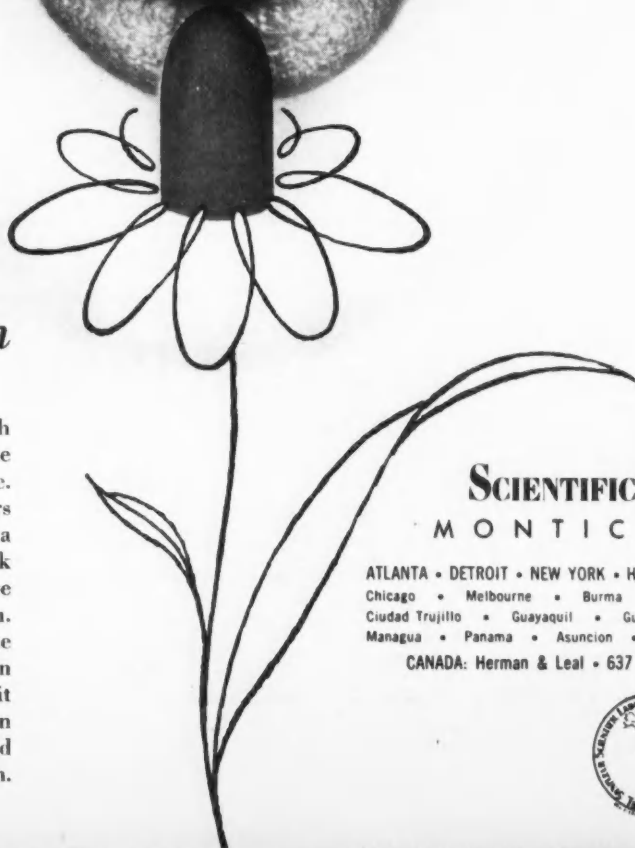


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FAT EMULSION

Effect of Heat on Solubility of Hydrophilic Emulsifiers

RUTH R. BENERITO and W. S. SINGLETON*

EMULSIONS of the oil-in-water (O/W) type, which are prepared for use in intravenous alimentation, must be sterile. Sterilization is accomplished by autoclaving at 121° for 10 to 20 min. This heating imposes a severe physical strain on the emulsion, yet the majority of the particles of dispersed oil must have a diameter at or less than 0.5 μ .

It is generally agreed that the dispersed phase in stable O/W emulsions are spherical, small particles coated with a liquid close-packed film of the emulsifier (7). Of the natural emulsions found in the human intestine the average diameter of the oil particles is 0.5 μ . Although mineral oil is not emulsified in the intestines, it has been found experimentally that the intestinal walls can absorb particles of paraffin oil which are 0.5 μ in diameter (3).

The oil particles in stable emulsions are covered usually by emulsifying agents, used singly or in systems so as to provide both a lipophilic and a hydrophilic moiety. The former group is anchored in the oil droplet,

and it is this group which forms the film on the oil particles. The lipophilic entity is usually a long-chain alkyl group, for example, the stearyl group. The hydrophilic part of the molecule of emulsifying agent must have an affinity for water or a tendency toward some degree of water solubility. Further, hydrophilic emulsifying agents should maintain their solubility in water at those temperatures likely to be encountered in emulsion preparation and sterilization.

The hydrophilic characteristics of a large number of non-ionic emulsifying agents are imparted by their content of various amounts of polyoxyethylene groups. The bonds between the water molecules and such emulsifying agents, which in turn link the oil to the water, are hydrogen bonds. The energy of dissociation of all hydrogen bonds between two oxygen atoms for which data are available is of the order of magnitude of 7 kcal./mole (9, 10). This is a weak bond compared with energies of 25-100 kcal./mole that are characteristic of most single covalent bonds. Simply the kinetic energy of motion at the sterilization temperature (121°) is sufficient to break such bonds, even in the absence of other factors.

In the present investigation the solubility at elevated temperatures of some water-soluble or dispersible emulsifying agents of the polyoxyethylene type was studied. For comparison, some emulsifiers with hydrophilic

*Southern Regional Research Laboratory, New Orleans, Louisiana. (One of the laboratories of the Southern Utilization Branch, Agricultural Research Service, U. S. Department of Agriculture.)

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groups of a different nature, and some with limited or no hydrophilicity, were investigated. An emulsifier of the non-ionic type exhibits inverse solubility with temperature because it associates with water. At the point of inverse solubility or breaking of the hydrogen bonds with water, solutions of such emulsifiers become turbid. Those emulsifiers which maintain complete solubility at the highest temperatures should aid in forming the most heat-stable emulsions.

Emulsifiers

The cross-sectional areas of the lipophilic long-chain fatty acid groups have been determined by many investigators, using the Langmuir balance on monomolecular films (6, 5, 1). The cross-sectional area of each palmitoyl and stearoyl group was found to be approximately 22 Å² whether it was measured as the acid, or as part of an ester, mono-, di-, or tri-glyceride molecule. Similarly the cross-sectional area of each oleoyl group was found to be twice as great or 46 Å². Therefore a calculation can be made as to the approximate amount of an emulsifier needed to cover completely the surface area of the oil droplets of a given particle size in an O/W emulsion. In the work reported here 1% of the various emulsifiers (based on the total weight of the solutions or dispersions) was used, providing a minimum of about 0.03 mole, which was 2 to 4 times the amount of emulsifier required to form a monolayer. The emulsifiers used are listed in Table I.^a

^aThe authors wish to express their appreciation to the following firms for generously supplying the samples of emulsifiers: Armour Chemical Co., Atlas Powder Co., Wyandotte Chemical Corp., Hachmeister Inc. and Glyco Products Co. The mention of products or trade names in the tables is not to be construed as an endorsement of these products by the Department of Agriculture over similar products of other companies. These products are named merely as part of the exact experimental conditions of this investigation.

The function of any emulsifier is to lower the interfacial tension between the oil and water phases. During the process of homogenization the interfacial area is increased tremendously. As an example, for every spherical droplet of 1-ml. volume (1.25 cm. in diameter) homogenized into spherical droplets 0.5 μ in diameter, the interfacial area is increased from 4.9 cm.² to 1.2 x 10⁶ cm.² If the dispersed phase is a refined, bleached, and deodorized cottonseed oil, which is the oil used in many intravenous emulsions, the process of homogenization would result in a large increase in free energy. Since the interfacial tension of such cottonseed oil is 17.6 dyne cm.⁻¹, the free energy increase would be of the order of 2 x 10⁶ ergs for each 1 ml. of oil emulsified into droplets 0.5 μ in diameter (8). The resulting emulsion would be unstable in the absence of an emulsifying agent. To form easily a stable O/W emulsion having small particle size (approximately 0.5 μ in diameter), the interfacial tension should approach zero in order to minimize the increase in free energy due to homogenization (2).

Experimental

One per cent solutions or dispersions of the various emulsifiers in water at room temperature were slowly heated until solubility inversion occurred. After inversion the samples were allowed to cool, and the temperature of clearing was observed. The warming procedure then was repeated. The inversion temperatures were found to be constant on repeated trials. The solubility characteristics are recorded in Table I. In addition to the polyoxyethylene type of emulsifiers other types are also included in Table I. These latter emulsifiers have a limited solubility in water.

In order to determine whether the inversion temperature of emulsifiers in water-solution was related to their

Table I. The water-solubility and emulsification characteristics of various emulsifiers.

Type	POE * groups per molecule		Inversion temperature °C.	Appearance on cooling to 25°C.	Emulsion description (diameters of oil drops in microns)	
	No.	Wt. %			Before autoclaving ^b	After autoclaving
POE glycol monoesters						
Laurate (Ethofat C-15).....	5	52	—	Dispersion	2-2.5, many 2.5-7.0, clusters	Oil-water phases
Laurate (Ethofat C-20).....	10	68	32	Solution	2- , many 7.0	Oil-water phases
Laurate (Ethofat C-25).....	15	76	66	Solution	2- , many 7.0	Oil drops-emulsion
Laurate (Ethofat C-60).....	50	91	92	Solution	0.7-1.5, some 4.0	Oil drops-emulsion
Stearate (Ethofat 60-25).....	15	70	66	Solution	0.7-1.5, some 5.0	Oil-water phases
Stearate (Ethofat 60-60).....	50	89	98	Solution	0.7-1.5, few 5.0	Stable 0.7-1.4, few 5.0
Red oil (Ethofat 142-15).....	5	—	—	Dispersion—oil layer	— — —	— — —
POE amines						
Lauryl (Ethomeen C-15).....	5	54	37	Solution	0.7-1.5, many 2.0-4.0	5-mm. Oil layer-emulsion
Lauryl (Ethomeen C-20).....	10	71	98	Solution	0.7-1.5, many 3.5	Oil-water phases
Stearyl (Ethomeen 18-15).....	5	45	—	Gel	0.7-1.5, some 2-3, few 5.0	5-mm. Oil layer-emulsion
Stearyl (Ethomeen 18-20).....	10	62	74	Dispersion	— — —	— — —
POE amides						
Lauryl (Ethomid HT-15).....	5	51	—	Dispersion	1.0-1.5, many 4.0-5.0	Oil-water phases
Lauryl (Ethomid HT-25).....	15	75	95	Solution	1.0-1.5	5-mm. Oil layer-emulsion
POE sorbitan monoesters						
Laurate (Tween 20).....	—	—	95	Solution	0.7-1.5, many 2.0-3.5	Oil-drops-emulsion
Stearate (Tween 60).....	—	—	76	Solution	0.7-1.5, some 5.0	2-mm. Oil layer-emulsion
Oleate (Tween 80).....	—	—	93	Solution	0.7-1.5, some 4.0-5.0	Small oil layer-emulsion
POE sorbitan polyesters						
Dilaurate (G7076H).....	—	—	—	Dispersion	0.7-1.5	2-mm. Oil layer-emulsion
Tristearate (Tween 85).....	—	—	—	Dispersion	— — —	— — —
Mixed triglyceride (G931).....	—	—	—	Dispersion	1.0-	Stable 1.0
POE alcohols						
Lauryl (Brij 30).....	—	—	—	Dispersion	0.7-	1-mm. Oil layer
Lauryl (Brij 35).....	(< C50)	—	100	Solution	0.7- , some 2.0	Stable 0.7, some 2.0
Ethylene Propylene Oxide (Pluronic F-68).....	—	80	100	Solution	0.7- , some 2.0-3.0	Oil-water phases
Sorbitan esters						
Monolaurate (Span 20).....	—	—	—	Gel	0.7-1.5, few 2.0-3.0	Oil-water phases
Monopalmitate (Span 40).....	—	—	—	Gel	0.7-1.5	Oil-water phases
Monostearate (Span 60).....	—	—	—	Gel	0.7-1.3	Oil-water phases
Tristearate (Span 65).....	—	—	—	Dispersion	— — —	— — —
Trioleate (Span 85).....	—	—	—	Oil layer	— — —	— — —
Glycerol sorbitan laurate (G672).....	—	—	—	Dispersion	0.7- , some 4.0	Large oil drops-emulsion
Purified soybean phosphatides.....	—	—	—	Dispersion	0.7- , many 2.0	Oil drops-emulsion
Polyglycerol oleic ester (Demal 14).....	—	—	—	Dispersion	2.0-3.0	Oil-water phases
Polyethylene glycol stearate (PGS-400).....	—	—	—	Dispersion	0.7- , some 2.0	1-mm. Oil layer
Monoglyceride (Myvacet).....	—	—	—	Dispersion	Many 20-50	Oil-water phases
Di-acetyl tartaric ester of mono- and diglyceride (TEM).....	—	—	—	Dispersion	1.0- , many 3.0	Oil layer-emulsion

* Polyoxyethylene.

^b Maximum temperature during homogenization 62°C.

Emulsifier	POE ^a groups per molecule		Number of recycles and pressure	Emulsion ^b appearance and particle size, microns
	No.	Wt. %		
POE glycol monoesters Lauryl	5	52	8; 2,500 p.s.i. 10; 3,500 p.s.i.	Poor, many 14.0 and up Worse, some 28.0, oil separation
Lauryl	15	69	10; 3,500 p.s.i. 20; 3,500 p.s.i.	General 0.7, some 2.0 Worse, many 3.0
Lauryl	50	92	7; 2,500 p.s.i. 7; 3,500 p.s.i.	General 0.7-1.5, few 3.0 Worse, general 1.5-2.0, some 3.0
Stearyl	50	88	7; 2,500 p.s.i. 1; 3,500 p.s.i. 8; 3,500 p.s.i.	Most 1.0-1.5 Many 3.0 Worse, general 3.0
Polyglycerol ester Oleic	—	—	7; 2,500 p.s.i. 1; 3,500 p.s.i. 15; 3,500 p.s.i. 20; 3,500 p.s.i.	General 0.7-1.5, few 3.0 General 0.7-1.5, few 3.0 Most 1.0-1.5, many 3.0-4.0 Worse, general 2.0-3.0

^a Polyoxyethylene.

^b Emulsion is 15% crude olive oil, 1% emulsifier, 5% dextrose.

Table II. Effect of homogenization pressure and recycling on particle size.

behavior in actual emulsions with oil, several emulsions containing 15% by weight of a refined, bleached, and deodorized sesame oil and 1% of an emulsifier (based on total weight) were made in a laboratory homogenizer. It had been experimentally determined previously that an emulsion had to be recycled through the homogenizer at a pressure of 3,500 p.s.i. in order to attain a particle size of about 0.5 μ . The procedure used in all cases consisted of first passing the oil and emulsifier through the homogenizer and obtaining homogenization pressure of 3,500 p.s.i., then slowly adding half of the total amount of water. Next the mixture was recycled four times. The remaining water was added and the emulsion was recycled five times at the same pressure. The temperature resulting from homogenization was controlled by a heat exchanger and maintained between 60°-63°. Particle size of the emulsion was determined by examination with a microscope having a calibrated micrometer scale and an oil immersion lens. A magnification power of 950 was employed. Particle-size determinations were made on undiluted emulsions and emulsions diluted with 4 parts of water. All emulsions were autoclaved in closed bottles with steam at 121° for 10 min. Results are given in Table I. An emulsion was considered to be stable to autoclaving if it maintained the particle size which it had before autoclaving. Each emulsion which was not obviously broken on autoclaving was reexamined microscopically to compare particle sizes before and after autoclaving.

In another series of emulsions of olive oil the temperature rise resulting from homogenization was not controlled, and the changes in particle size of each emulsion were followed as the pressure of homogenization and number of recyclings were increased. Data relating the increase in particle size with increase in temperature are given in Table II. In many cases the temperature of homogenization reached 85°-90° on continuous recycling.

It is realized that the incorporation of a strongly lipophilic emulsifier in addition to a hydrophilic emulsifier would probably tend to prevent growth of particle size during homogenization and would also provide increased stability during autoclaving. Accordingly a limited number of emulsions containing 15% of sesame oil were prepared with various lipophilic emulsifiers in combination with some of the water-soluble emulsifiers containing in excess of 15 polyoxyethylene groups per alkyl group. Typical examples of such emulsions are given in Table III.

Emulsifiers	Range of concentration (%) of emulsifiers studied	Stability to autoclaving
POE ^a lauryl alcohol.....	0.5-1.2	Unstable
Polyethylene-propylene oxide.....	0.3-0.75	
Diacyl tartaric acid ester of mono- and diglyceride.....	0.75-1.0	Unstable
Polyethylene-propylene oxide.....	0.5-0.75	
Glycerol sorbitan triglyceride.....	0.4-0.5	Unstable
Polyethylene-propylene oxide.....	0.5-0.6	
POE lauryl alcohol.....	0.45-0.75	Stable
Glycerol sorbitan triglyceride.....	0.45-0.75	
Polyglycol monester.....	0.3-1.2	Stable
Polyethylene-propylene oxide.....	0.5-0.75	
Diacyl tartaric acid ester of mono- and diglyceride.....	0.3-0.5	Stable
Polyethylene-propylene oxide.....	0.75	
Glycerol sorbitan laurate.....	0.2-0.8	Stable
Polyethylene-propylene oxide.....	0.3-1.2	

^a Poxoxyethylene.

Table III. Emulsions with two emulsifiers.

Results and Discussion

It is recognized, of course, that many good emulsifiers are not completely soluble in water but form dispersions. However, to provide increased emulsion stability at the temperature of sterilization, the emulsifier must be more hydrophilic than many oil-in-water emulsifiers that are satisfactory in ordinary use and must have an increased affinity for water at temperatures up to 120°C.

As seen from Table I, with a given type of emulsifier containing polyoxyethylene groups, the temperature at which solubility inversion occurs was found to increase as the weight percentage of polyoxyethylene groups increased. The variation in limit of solubility of the glycol lauryl ester type emulsifiers was from insoluble at room temperature to soluble up to about 92°C. as the weight percentage of polyoxyethylene groups increased from 52 to 91%. The glycol stearyl esters were more soluble than the lauryl esters at elevated temperatures. At identical inversion temperatures of 66° the weight percentage of polyoxyethylene groups were 76 and 70 for the lauryl and stearyl esters, respectively; at approximately the same weight percentage of polyoxyethylene groups, 70%, the inversion temperature of the lauryl ester was 32°, and of the stearyl ester, 66°. However a comparison of the types of emulsifiers of approximately the same weight percentage of polyoxyethylene groups shows widely different inversion temperatures. The amine type emulsifier was found to be more soluble than the amide, which in turn was more soluble than the ester type. In some of the polyoxyethylene emulsifiers the percentage of such groups was unknown. The results obtained are analogous to those reported by Griffin in his calculation of HLB values (4).

In the polyethylene-propylene oxide emulsifier, greatly different in chemical type from the glycols or amines, the limit of solubility was not reached at the boiling point of water at atmospheric pressure. Although its weight percentage of polyoxyethylene groups was exceeded by other materials with lower temperatures of inversion, this material exhibited the longest solubility range of all the emulsifiers tested.

Usually the initial particle size of the emulsion depends on the pressure of homogenization, under otherwise equal conditions. Data in Table I indicate that, in most cases, the general particle sizes immediately after the homogenization process, during which time a heat

exchanger was used, were about the same. However the stabilities of the emulsions at the temperature of the autoclave varied greatly.

As the temperature rise due to homogenization increased on recycling without external cooling, the particle size in a given emulsion also tended to increase, as shown in Table II. In the case of the emulsifier with the low solubility inversion temperature of 32°, oil actually separated out on recycling as the temperature approached 90°. In the other cases oil was not visible on recycling, but the number of droplets larger than 3 μ per microscopic field increased. The initial temperature of homogenization was 25°, and the maximum temperature reached during continuous recycling was 85–90°.

Emulsions were made with some emulsifiers whose inversion temperatures were above 85°, which is the usual temperature reached during repeated recycling during homogenization at pressures as high as 3,500 p.s.i. With these emulsifiers the increase in particle size was not as great as with those emulsifiers which inverted under 85°. The polyethylene-propylene oxide was able to withstand the highest temperature reached by the homogenizer (85–90°C.).

The results obtained indicate that the combination of high temperature and extreme mechanical shear caused by homogenization at high pressure causes particle-size growth in emulsions containing only those emulsifiers which exhibit solubility inversion at temperatures lower than about 85°. It is apparent that the weight percentage of polyoxyethylene groups must reach a certain optimum for a given alkyl group for a given emulsifier which is in agreement with the report of Griffin (4). In general, emulsifiers require approximately 70% by weight of polyoxyethylene groups in order to withstand homogenization and sterilization in emulsions of the type investigated.

It is not the purpose of the present paper to enumerate those emulsions which are stable with respect to particle size and phase separation and those which are not. However it is evident from the data of Table III that a combination of hydrophilic-lipophilic emulsifiers results in a better emulsion than if either emulsifier is used alone. The results indicate that an emulsion can be improved with respect to particle size by the use of two emulsifiers rather than only one. For example, an emulsion containing a polyoxyethylene lauryl alcohol as the only emulsifier showed no separation of phases on autoclaving, but the particle size ranged up to 2 μ in diameter. By the addition of a more lipophilic emulsifier, polyoxyethylene sorbitol triglyceride, the particle size was uniformly about 0.7 μ . The assumption must be made that a more stable bond between the oil and water phases was obtained, and the change in free energy of interfacial surface formation was less when two emulsifiers were used.

As indicated by the results, if two strongly hydrophilic emulsifiers are used, the resultant emulsion does not have good particle size, probably because of the limited number of oil-anchoring alkyl groups.

Summary

The bonds between some water-soluble emulsifiers and water are hydrogen bonds with low energies of dissociation, of the order of 7 kcal./mole. In the absence of other factors such bonds can be broken by the kinetic energy of motion at elevated temperatures.

The solubility of several emulsifiers was determined, and emulsions containing these emulsifiers at concentrations 2 to 4 times the amount required to make a monomolecular film of the oil droplets were made.

To provide emulsion stability at homogenization and

sterilization temperatures the emulsifiers must be more hydrophilic than many oil-in-water emulsifiers that are satisfactory in ordinary use and must have an increased affinity for water in the temperature range of 5° to 120°. For a given type of emulsifier containing a given alkyl group, an optimum weight percentage of polyoxyethylene groups is required.

The solubility of an amine type emulsifier with the same alkyl group and approximately the same weight percentage of polyoxyethylene groups per molecule is greater than that of the corresponding amide compound, which, in turn, is more soluble than the corresponding ester type of emulsifier, because of differences in chemical type. Polyethylene-propylene oxide had the longest solubility range of the emulsifiers tested.

An increase in particle size or an appearance of two phases in emulsions prepared with emulsifiers which undergo solubility inversion below 85° was found. Emulsions prepared with emulsifiers whose inversion temperatures were above 85° maintained, generally, a low particle size on autoclaving, did not separate into a watery phase and an emulsion phase, and did not form a layer of oil.

Emulsions prepared with two emulsifiers, such that one had some lipophilic characteristics stronger than the other, were found to be stable and maintain a low particle size on autoclaving.

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"Even Primitive Woman comes in aerosol containers this year."



Photo courtesy Max Factor Co.

Progress in PERFUMERY MATERIALS

Part 2

PAUL Z. BEDOUKIAN, PH.D.

Author of Perfumery
Synthetics and Isolates



DR. PAUL Z. BEDOUKIAN concludes his review of developments in the field of perfumery materials during the past year with Part 2 of his thirteenth annual report.

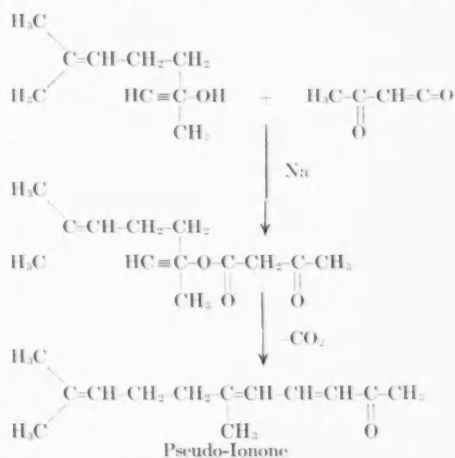
Irone and Ionone

Naves is vigorously continuing his studies on the various isomers of irone. The most desirable irone from an odor viewpoint is iso-alpha irone and is chemically 2,6-trans-2,2-cis 6-methyl alpha ionone⁶⁷. A novel method of preparing 2-methyl-alpha-irone is reported in another publication⁶⁸. A number of other homologs of irone including cyclohexyl and cyclopentyl irone have also been prepared but they are reported to lack the characteristic violet odor⁶⁹. On hydrogenating 2,6-trans-2-methyl-alpha irone, two dihydro irones were obtained which appeared to differ in the conformation of the ring⁷⁰. Hydrogenation of irone and the study of its cyclization products are described in another paper. A new synthesis of irone starts with 2,3-dimethyl-2-hepten-6-one and gamma bromo crotonic acid ester⁷¹.

Preparation of trans-3-methyl citral from 3-methyl linalool is described in a recent patent⁷². Another patent discloses the preparation of pseudoirones from 3-methyl geraniol or 3-methyl linalool using the Oppenauer oxidation⁷³.

A recent British patent describes a novel method of

preparing pseudoirone or pseudoionone⁷⁴. Starting with



an acetylene alcohol and diketene, an ester is obtained which on heating loses carbon dioxide to give pseudoionone or pseudoirone depending upon the starting material. The process appears to have unlimited commercial application. A similar reaction is used in preparing pseudoionone by reacting methyl heptenone with acetylene and then treating the acetylenic alcohol with diketene⁷¹⁸.

An improved method of preparing pseudoionone is

reported in a patent whereby citral is condensed with acetone in benzene using sodium phenate as the catalyst⁷⁵. A new and total synthesis of pseudoionone is given in a Russian publication⁷⁶.

Ultraviolet irradiation of beta ionone yielded two isomeric beta ionones. The isomers were shown to be a cyclic oxide and a product containing a cyclopropane in the side chain⁷⁷. Similar treatment of trans-alpha ionone gave a product which was studied and found to be not identical with parmone⁷⁸. A Swiss patent describes the preparation of the derivatives of 3-hydroxytetrahydroionone⁷⁹.

Studies of certain reactions of alpha ionone show that the compound has 2',2'-trans structure⁸⁰. A new methyl ionone, namely 2-methyl ionone, has been synthesized and its odor was found to be similar to alpha ionone⁸¹. Studies have been made on the cyclization of alpha, alpha-dimethylgeranic acid and its derivatives⁸².

A new method is described for the preparation of dihydrogamma ionone⁸³. It is cyclized with the greatest ease even by weak acids⁸⁴.

Beta ionone is reported to condense with allylic lithium compounds, giving compounds useful in the synthesis of Vitamin A⁸⁵.

Terpenes

Autooxidation of pinene with oxygen at elevated temperatures yielded a large number of oxygenated products including the epoxide of pinene, trans-pinocarveol, trans-verbenol, verbenone, etc.⁸⁶ Pinonic acid was obtained from pinene by its oxidation with potassium permanganate⁸⁷ or the decomposition of its ozonide⁸⁸. By studying the rates of oxidation of pinene in the presence of a large number of antioxidants, the relative effectiveness of the inhibitors were classified⁸⁹.

The epoxides of pinene and limonene were prepared using monophosphoric acid and a number of derivatives were made from the epoxides⁹⁰. The rate of autooxidation of limonene and the factors influencing the reaction have been carefully studied^{90a}. The hydroperoxide formed by the autooxidation of terpinolene was converted to 1,4 (8)-menthadien-3-ol on sulfite reduction and to menthol on reduction or hydrogenation with Raney nickel^{90b}.

Limonene was isomerized to p-cymene by treating with sodium under suitable conditions⁹¹. Similar studies have been carried out with phellandrene and menthadienes⁹².

Terpenes having a conjugated system will readily undergo the Diels-Alder addition. Thus, 3,8 (9)-p-menthadiene forms an addition product with maleic anhydride⁹³. The structure of the addition products of maleic anhydride and 1-naphthoquinone to alloocimene were reported by other workers⁹⁴. Various addition products to myrcene have also been subjected to a thorough study⁹⁵.

Partial hydrogenation of d-limonene yielded d-carvomenthone which on treatment with tert-butyl chromate gave 57% of carvotanacetone. It was shown that oxidation took place exclusively in the 6-position⁹⁶. Cineole was converted to terpineol on treatment with sodium peroxide⁹⁷.

Geraniol and nerol have been synthesized by treating methyl heptenone with bromoacetic acid ester in the presence of zinc and reducing the resultant ester⁹⁸. Beta cyclocitral has been synthesized starting with 1-ethynyl-2,2,6-trimethyl cyclohexanol⁹⁹. Dehydration of trans-dihydroisophorol has led to alpha cyclogeraniolene^{99a}. The synthesis of phellandral from dihydrocryptone is reported in another publication^{99b}.

A British patent discusses a method of preparing

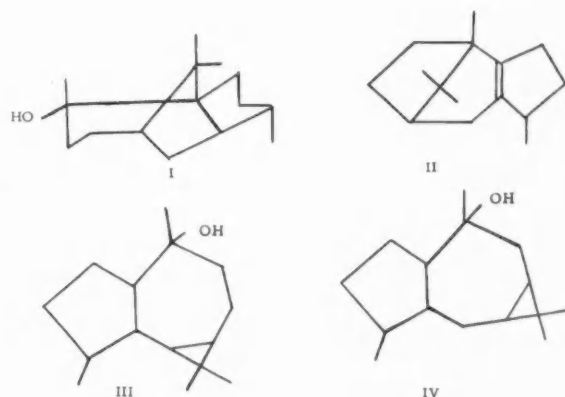
methyl heptenone which can be readily converted to various terpene materials^{99b}. The process depends on the preparation of 5-halo-2-pentanone which is then converted to the ketal. The ketal on reacting with acetone by any of the usual methods gives methyl heptenone ketal.

An excellent review article deals with the conformational structure of terpenes^{99c}.

Sesquiterpenes

A new synthesis of farnesol and farnesal has been reported^{99d}. The steric course of the cyclization of farnesic acid and farnesylacetic acids has been the subject of a thorough investigation^{99e}.

On the basis of studies on patchouli alcohol, structure I has been assigned to it. The hydrocarbon derived from it on treatment with sulfuric acid is shown to be II^{99f}. The constitution of globulol is reported to be either III or IV^{99g}.



Studies are being continued to determine the structure of humulene^{99h}. Recent investigations indicate that it probably has a 1,4,4,8-tetramethyl cycloundecane skeleton¹⁰⁰. Although the structure of caryophyllene has been determined, further research is being carried out with a view to identifying some of its reaction products¹⁰¹⁻¹⁰²⁻¹⁰³⁻¹⁰⁴⁻¹⁰⁵.

The structure of cedrol has been confirmed by an unambiguous stereospecific total synthesis of this very complex alcohol¹⁰⁶. A review covering the work on cedrol and cedrene leading to the elucidation of its structure and total synthesis has been published¹⁰⁷.

Of the numerous other studies relating to sesquiterpenes, those dealing with santonin¹⁰⁸, isosantenones¹⁰⁹ and santenols¹¹⁰ are of special interest. Another paper deals with the hydrogenation products of santonin and alantolactone¹¹¹. A new term, pelanolides, is suggested for a group of sesquiterpene lactones found in *Artemisia absinthum*¹¹². A tricyclic sesquiterpene alcohol, himbacol, has been isolated from *Himantandra baccata*¹¹³.

Biogenesis of Essential Oils

Speculations as to the formation of essential oils have always been a fascinating subject. Recent work employing tracer techniques to study the formation of sterols in plants or the animal kingdom indicate the importance of the role of squalene, which may have a bearing on the formation of terpenes in plants. A series of three papers puts forth two hypotheses for the biogenesis of non-terpene constituents of essential oils involving stepwise

degradation of amino and fatty acids. Structural relationships of the acids and various constituents were shown graphically¹¹². Another paper indicates the possibility of the formation of phenolic constituents of essential oils from lignin¹¹³. A report has been published on current research in Australia on the formation of citronellal in *Eucalyptus citriodora*, and phenyl ether in *Melaleuca bracteata*¹¹¹. The idea that essential oils are merely waste products formed by chance is discounted¹¹⁰.

Essential Oils

Some of the high boiling constituents of citronella oil have been studied and new sesquiterpene components noted¹¹⁶. Two of these were characterized as gamma cadinene and elemicin¹¹⁷. In the lower boiling fractions, the presence of octanal and decanal was shown and reported to occur to the extent of 0.2 and 0.3%¹¹⁸. An empirical formula was developed as being of value in determining the citronellal content of the oil from the Belgian Congo¹¹⁹. Various types of citronella oils were discussed in another article¹²⁰.

Attempts to cultivate peppermint of the Mitcham Black mint variety have been carried out in Yugoslavia¹²¹. The oil obtained from Netherland plants is reported to compare favorably with American peppermint oil¹²². Peppermint of the Italo-Mitcham variety cultivated in Italy has been studied and the chief constituents of the leaf and flower oils during the period of blooming have been noted¹²³. The presence of menthofuran in Italian oil has been established¹²⁴. In view of the occurrence of this furan in substantial quantities in certain American oils, its undesirable odor and flavor characteristics, it is of interest to note a publication dealing with its autoxidation¹²⁵.

The properties of Italian spearmint oil were reported in a recent publication¹²⁶. The main component of the high boiling fraction of Indian spearmint oil is stated to be terpenic glyoxal, which has been investigated and described as a compound possessing a cyclopropane ring¹²⁷.

Florida has become a very important source of citrus oils. Two commercial methods of producing orange oils, namely the FMC In-Line Extractor and the Screw Press extraction method have been fully described and the physiochemical properties of the oils reported. The authors also give the characteristics of Florida cold-pressed grapefruit, tangerine and Persian lime obtained by the two processes¹²⁸. The characteristics of the Bergamot oils of 1954-1955 crop have been tabulated¹²⁹. The coumarins of citrus bergamia were studied and the presence of citropten, bergapten and bergaptol was reported¹³⁰.

The characteristics of the oil obtained from *Lavandula hybrida* in Calabria have been described¹³¹. The odor of the oil from *Lavandula vera* is reported to be due mainly to linalyl isobutyrate¹³². The methods used in obtaining turpentine from conifers were discussed at some length in another publication¹³³.

The results of a careful fractional distillation of Indian vetiver oil have been disclosed. A sesquiterpene primary alcohol and an azulene were identified¹³⁴. In studying methods of analysis, it was found that infra red spectrophotometric determination of the cyclopropane ring in santalol is a reliable method for judging the purity of sandalwood oil¹³⁵. Indian standards for the essential oils of lemongrass, gingergrass, camphor rectified, peppermint, turpentine, geranium and ginger have been published¹³⁶.

The composition of the oil obtained from carrot seed grown in the northern Caucasus was determined¹³⁷⁻¹³⁸.

The oil obtained from *Salvia sclarea* in Bulgaria is reported to compare favorably with the commercial oil. Conditions for harvesting and distillation are being studied¹³⁹. Similar studies have been made in Yugoslavia¹⁴⁰. The best production of the oil of *Cistus ladaniferus* in Spain is being carried out by solvent extraction rather than steam distillation¹⁴¹. The phenolic components of incense cedar wood, *Libodectrus decurrens*, are being investigated¹⁴². The essential oil of wine lees has been found to contain the esters of octanoic, nonanoic, decanoic, lauric and myristic acids¹⁴³.

Reports on Miscellaneous Essential Oils

Constant experimentation is going on in many parts of the world with a view to finding new sources of essential oil bearing plants and improving existing ones.

India has always been an important producer of numerous essential oils and it is encouraging to see increased activity in this field. Aside from a number of publications in British journals, much of the activity in this field is reported in Indian publications. Examination of the oil of *Prunella vulgaris* revealed camphor, fenchone and probably fenchyl alcohol as its main constituents¹⁴⁴. Distillation of the fresh leaves and flowering stalks of *Majorama hortensis* gave an oil which contained eugenol, chavicol, linalool, methyl chavicol, terpineol and caryophyllene¹⁴⁵. The motia and sofia varieties of roshagrass (*Cymbopogon martini*) yield palmarosa and gingergrass respectively. The characteristics of each are reported¹⁴⁶. The essential oil obtained from the seeds of *Aglaia odoratissima* were rich in aromandrene and also contained cineole, terpinene, citral and sesquiterpenes¹⁴⁷. The oil obtained from the fresh flowers of Karna gave a pleasant smelling oil¹⁴⁸.

Essential oil production is also being encouraged in the Soviet Union. The volatile oil obtained from four varieties of Siberian tansies (*Tanacetum vulgare*) was studied¹⁴⁹. Other reports give the composition of the oil obtained from *Artemisia transiliensis*¹⁵⁰ as containing 56% cineole; *Artemisia santolinifolia*¹⁵¹, rich in thujone and fenchone; *Artemisia lessingiana*¹⁵², rich in camphor, and *Artemisia tomentella*, rich in alcohols and hydrocarbons¹⁵³. Other oils studied include that obtained from *Dracocephalum stamineum* which consisted mostly of citral and geraniol and its esters¹⁵⁴. Yugoslav thyme oil from *Thymus vulgaris* was found to contain a phenol content of 27 and 22 per cent in two consecutive years and to possess definite anthelmintic properties¹⁵⁵.

The oil from *Salvia juristicii* is reported to contain a new terpene hydrocarbon named salvene which may be dihydrotanaketene¹⁵⁶. The oil is said to be rich in borneol and cineol. The essential oil of *Seseli tortuosum* contains over 30% carotol¹⁵⁷. Further reports have been published on the essential oil of *Peucedanum cervaria*¹⁵⁸ and *Fucrea gigantea*¹⁵⁹.

The Brazilian tree *Tinguaciba da Restigua* yields an essential oil consisting principally of terpineol and its acetate along with phloracetophenone¹⁶⁰. The seeds of the Brazilian *Myrocarpus frondosus* gave an oil containing cadinols and cadinene¹⁶¹.

Fenchone was found to be the principal component of *Thuja standishii*¹⁶². The oil of *Artemisia capillaris* has shown a specific and powerful growth inhibiting and antifungal activity. The active principle called capillin has been subjected to an investigation¹⁶³.

Experimental distillation of the following oils are reported from Italy, *Anthemis nobilis*, *Mentha piperita*, *Origanum vulgare*, *Thymus serpyllum*¹⁶⁴.

The oil obtained from *Strobilanthesis linifolia* from northern Rhodesia appeared to consist almost entirely

of sesquiterpene compounds¹⁶⁵. The physical constants of Mahuhu oil are given in another publication¹⁶⁶.

Reports on Aromatic Chemicals

An important ingredient of lavender, namely, linalulol, can not be made easily and is consequently not available as a commercial product. However, tetrahydrolavandulol can be made more readily and can be used in perfume compositions. The properties and possible uses of the esters of tetrahydrolavandulol were discussed in two recent articles^{167, 168}. The preparation of linalyl acetate is carried out most conveniently by reacting linalool and acetyl chloride in the presence of dimethyl aniline at low temperature¹⁶⁹.

Cinnamic aldehyde was reduced to the corresponding alcohol in high yields by the use of aluminum isopropylate in the presence of a large quantity of isopropyl alcohol¹⁷⁰. The acid catalyzed reaction of cinnamic alcohol with formaldehyde has been studied in some detail and the reaction products identified¹⁷¹. Cinnamaldehyde has been obtained by the formulation of styrene^{171a}.

Pearl and co-workers are continuing their studies on vanillin and preparing a large number of derivatives with a view to finding new uses for this versatile aromatic. Vanillin ethers and vanillic acid ethers were prepared in a recent study¹⁷². A patent describes the preparation of bivanillyl¹⁷³. The use of catalysts polyphosphoric acid¹⁷⁴ and boron fluoride¹⁷⁵ in the Pechmann reaction of preparing substituted hydroxy coumarins has been investigated. The preparation of various coumarin derivatives is described in another reaction¹⁷⁶. The merits of various organic bases as catalysts were investigated in condensing salicylaldehyde and its derivatives with ethyl acetoacetate¹⁷⁶. Another paper describes a new preparation of dihydrocoumarin¹⁷⁷.

A Canadian patent describes the preparation of phenyl ethyl alcohol by the hydrogenation of styrene oxide¹⁷⁸. The methyl ether of phenyl ethyl alcohol is prepared by reacting the alcohol with methyl sulfate in the presence of alkali¹⁷⁹. An economical method of preparing benzyl acetate involves the treatment of benzyl chloride with sodium acetate in an aqueous solution¹⁸⁰. Excellent yields of isobornyl acetate are reported by reacting camphene with acetic acid in the presence of cation exchange resins¹⁸¹. Synthesis of thymol from m-cresol through the Friedel-Crafts reaction is described in another publication¹⁸².

Observations on the Odor Properties of Some Aromatics

Cumylacetaldehyde has been reported to possess an orange flavor¹⁸³. Alpha methyl acetophenone has been synthesized and possesses a cassia-like fragrance and taste¹⁸⁴. 2-Phenylbenzothiazole possesses a rose scent¹⁸⁵ according to another publication. Various esters of furanacrylic acid are claimed to possess pleasant odors suitable for use in the perfume industry¹⁸⁶. The one carbon atom higher and lower homologs of citronellal have been synthesized¹⁸⁷.

The influence of isomerism on the odor of compounds is a fascinating subject which has not received sufficient attention. On reducing 3-hexynol with palladium catalyst, the resultant 3-hexenol had an odor similar to the one isolated from green tea or peppermint. On the other hand, reduction of 3-hexynol with sodium in liquid ammonia gave 3-hexenol possessing a different odor¹⁸⁸. Various isomers of hexenols have been studied and cis-jasmone synthesized¹⁸⁹.

Cis-cinnamaldehyde and cis-benzylideneacetone have

been prepared in pure form and the odors found to be similar to the trans isomers¹⁹⁰. Cis-trans isomers of 3-decen-2-one and 3-hepten-2-one have also been prepared and studied¹⁹¹. The separation of the stereoisomers of 3-ethyl-3-penten-2-one is reported by fractional distillation through an 85 plate efficiency Podbielniak column¹⁹².

Books and Reviews

Of the greatest importance to the essential oil industry is the appearance of the first volume in German, of Gildemeister and Hoffmann's "Die Atherischen Ole." This is the fourth edition of this famous publication and it has been completely revised and brought up to date by Wilhelm Treibs and co-workers. The first volume deals with the history, world production, uses, the biogenesis, production, etc. of essential oils¹⁹³.

A number of interesting review articles appeared during the last year. An extensive article on recent developments in the field of essential oils was of particular interest¹⁹⁴. The essential oils originating in the British Commonwealth were discussed in another article¹⁹⁵. This is the writer's thirteenth article on annual progress in perfumery materials¹⁹⁶.

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(Continued on page 49)



A. B. BOOTH*

Examination of SAVIN OIL



A QUANTITY of Savin Oil (*Juniperus Sabina*) was fractionated and the fractions examined by infrared spectrophotometry. A limited amount of chemical work was also carried out. The oil was found to consist of about 20% d-sabinene and about 40% d-sabinyl acetate, the balance being minor compounds. The minor compounds identified were α -pinene, myrcene, limonene, cymene, cis and trans-thujones, sabinol, terpinene-4-ol and carvacrol. Minor compounds indicated by infrared, but not completely identified were α -thujene, a phenol or enol accompanying carvacrol, a sesquiterpene hydrocarbon, a caustic insoluble aromatic compound boiling in the sesquiterpene hydrocarbon range, an alcohol boiling above the sesquiterpene hydrocarbon and a fatty acid, probably caprylic. In connection with the identification of terpinene-4-ol, the p-menthane-4-ol of melting point 53°C was synthesized from 3-menthene.

THE object of the present work was to secure a few infrared spectra of certain terpenes characteristic of Savin Oil rather than a thorough or complete analysis of the oil. Nevertheless, enough data were taken so that a more complete picture of the oil was obtained than was available from the literature.

Nine hundred grams Savin oil purchased from Dodge & Olcott was fractionated in a 1 inch by 60 inch column still packed with $\frac{3}{16}$ inch glass helices. The distillation was conducted using a reflux ratio of 29:1. The head pressure was maintained at 40 mm. absolute pressure

until the hydrocarbons were removed, then was changed to 10 mm. for the remainder of the distillation. When 84.6% of the charge had been distilled, the residue was transferred to a still having a short unpacked column, and the distillation was resumed until the pot temperature rose to 200°C. Infrared spectrograms, refractive index and optical rotation were taken for each fraction. Analytical data are shown in Table I.

The light portion of the distillate (first 10.3%) was redistilled at 100 mm. pressure, again taking refractive indices, optical rotations and infrared spectrograms, see Table II.

The last part of the distillate, that produced without

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a packed column, was extracted with dilute alkali to remove acids and phenols, then redistilled through a short packed column. Data for this distillation is shown in Table III.

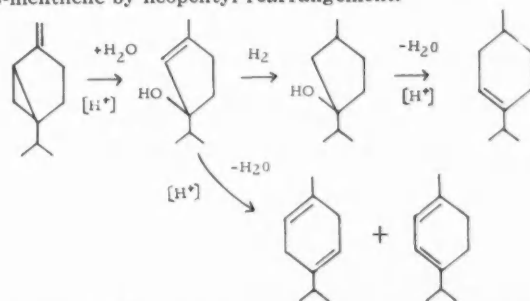
The minor compounds, α -pinene, myrcene, limonene, cymene, the two thujones and carvacrol, were identified by means of standard infrared spectrograms of the authentic compounds. In the case of the identification of the thujones, they were isolated as their semicarbazones and regenerated.

The alcohol sabinol was identified as being identical to the alcohol obtained by saponification of sabinyl acetate, a major component of the oil.

Terpinene-4-ol was identified by finding it identical with the alcohol produced by the phosphoric acid hydration of sabinene. However, the structure of this product has not been entirely free from ambiguity due to the facts that its homogeneity was unproved and that its conversion products usually involved treatment with an acid at some stage, so that the possibility of molecular rearrangement was present. Considerable work was done to reduce this uncertainty.

Naves¹ has shown that hydrogenation of terpinene-4-ol prepared from sabinene yields a crystalline alcohol m.p. 53° which yields 3-menthene upon treatment with acids. But p-menthane-3, 4 and 8-ols, each of which exists in several geometric forms, yield 3-menthene with acids and further, a neopentyl alcohol theoretically possible

from the hydration of sabinene could conceivably yield 3-menthene by neopentyl rearrangement.



The alcohol m.p. 53° was prepared from sabinene and found to be optically inactive, thus eliminating the neopentyl structure.

The next step was to synthesize the alcohol m.p. 53° from 3-menthene. It was found that if 3-menthene was saturated with HBr gas and the resultant hydrobromide hydrolyzed and carefully fractionated, a small yield of the alcohol m.p. 53° was obtained. This is the high melting form of p-menthane-4-ol. The major products of the preparation, however, were the low melting form of p-menthane-4-ol and trans-p-menthane-8-ol. Crystals of each of the p-menthane-4-ols could be obtained from appropriate fractions by cooling to -15°C. The low

Table I. Savin oil—Distillation of the complete oil.

Cut	°40°C.	% Distilled	N _D ²⁵	α_D (10cm. tube)	Remarks
1	66-68	0.7			Redistilled as Light Portion Contains α -Pinene, Thujene (?) Sabinene
2	-71	3.1			
3	73	5.4			
4	73	7.9			
5	74	10.3			
6	74.5	12.6	1.4655	+85.8	Sabinene
7	75	15.1	1.4660	86.8	
8	75	17.3	1.4660	87.4	
9	75	19.7	1.4660	87.4	
10	75	22.2	1.4660	86.7	
11	75	24.7	1.4660	85.4	Myrcene & Sabinene Myrcene & Sabinene (max. Myrcene) Maximum Limonene Maximum Cymene Maximum Thujones Maximum Terpinene-4-ol Maximum Sabinol—begin acetate
12	76	27.2	1.4660	80.9	
13	78.5	29.4	1.4668	63.8	
14	82	30.9	1.4700	36.1	
15	°10 53-57	33.5	1.4768	32.2	
16	-63	35.7	1.4781	29.2	Mostly Sabinyl Acetate
17	82.5	38.2	1.4658	27.0	
18	90	41.0	1.4722	22.3	
19	94	43.6	1.4764	25.2	
20	100	46.3	1.4692	49.5	
21	100.5	48.9	1.4660	65.4	Nearly Pure Sabinyl Acetate
22	100.5	51.5	1.4659	72.9	
23	101	54.5	1.4670	77.3	
24	101	57.4	1.4675	79.8	
25	101	60.2	1.4680	81.5	
26	101	63.2	1.4680	82.3	Some Sabinol Acetate, Phenols Sesquiterpenes
27	101	66.0	1.4681	82.7	
28	101	68.8	1.4682	83.0	
29	101	71.6	1.4682	82.6	
30	101	74.5	1.4685	82.75	
31	101	77.3	1.4685	82.75	Residue (63 g. = 7%).
32	101	80.1	1.4683	82.2	
33	102	82.8	1.4690	79.5	
34	102	84.6	1.4700	75.9	
Residue	(137 g. = 15.2%). Distillation continued with short unpacked column				
35	120-127	87.3	1.4936	+31.8	Residue (63 g. = 7%).
36	-142	90.4	1.4989	+22.8	
37	-158	92.0	1.5021	+13.2	
Residue	(63 g. = 7%).				

Cut	B.P.°C. at 100mm.	% Distilled	N _D ²⁵	$\alpha_D(10\text{cm. tube})$	Remarks
1	90-91	11	1.4572	+11.7	α -Thujene (?) — α -Pinene
2	92	22.6	1.4593	20.1	α -Thujene — α -Pinene
3	99.5	33.5	1.4612	36.8	α -Thujene — α -Pinene + Sabinene
4	97	44.5	1.4630	62.6	
5	97	55	1.4647	77.3	
6	97	64	1.4651	83.8	Sabinene
Residue	(36 %)		1.4667	80.6	Sabinene

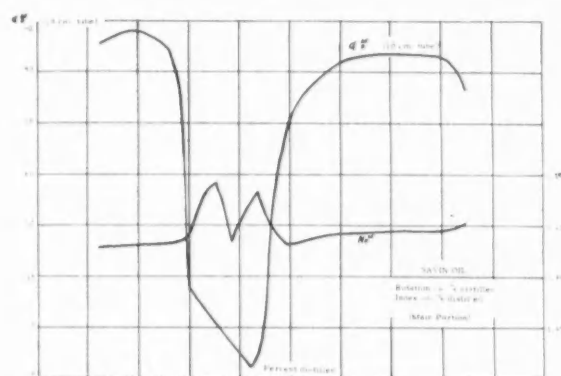
Table II. Savin oil—Redistillation of light portion (Fractions 1-5 incl., Table I.)

melting form of p-menthane-4-ol is also the lower boiling and it is a liquid at room temperature.

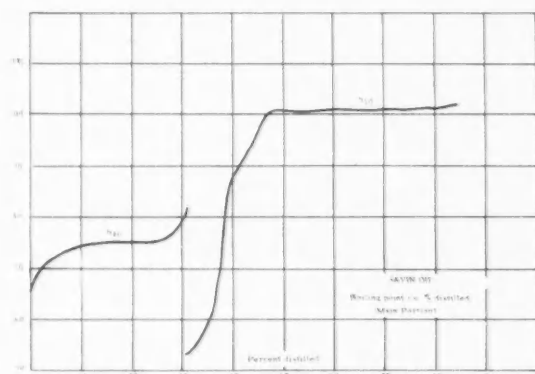
The preparation of p-menthane-4-ol by the addition of trichloroacetic acid to 3-menthene according to Masson and Reychler² followed by saponification of the ester yielded the low melting form of p-menthane-4-ol and much trans-p-menthane-8-ol, but no high melting p-menthane-4-ol nor any other detectable alcohols. The 3-menthene used in these experiments was free of 4(8) and 8(9) menthenes as shown by vapor chromatography so that there must be facile movement of the charge between the 4 and 8 positions under conditions of the

above preparations. Infrared examination of the two p-menthane-4-ols shows that they are distinctly different from the two p-menthane-8-ols and the four p-menthane-3-ols (menthol, neomenthol, neoisomenthol and isomenthol) so that there is no ambiguity. The identity of the alcohol m.p. 53° as the high melting isomer of p-menthane-4-ol is therefore confirmed as is the structure of terpinene-4-ol from sabinene.

The evidence for α -thujene, admittedly incomplete, is that the α -pinene was accompanied by a slightly lower boiling hydrocarbon having a lower index of refraction, but also showing a trisubstituted ethylenic double bond



Savin oil—Rotation vs. per cent distilled; index vs. per cent distilled



Savin oil—Boiling point vs. per cent distilled

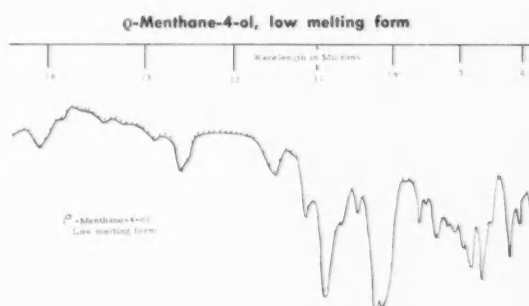
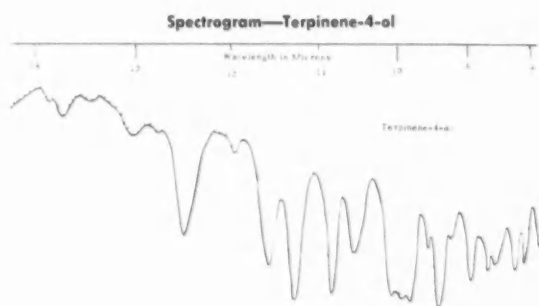


Table III. Redistillation of fractions 35-37 inclusive (Table I) after phenol removal, using a short raschig ring packed column.

Cut	B.P.°C. at 10 mm.	% Distilled	N _D ²⁵	$\alpha_D(10\text{cm. tube})$
1	105-115	19.4	1.4817	+46.8
2	128.5	38	1.4931	+28.6
3	131	58	1.5030	+21.3
4	137.5	80		
5	173.5	90		
Residue	(9.7 %)			

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by infrared. The only terpene having these properties is α -thujene.

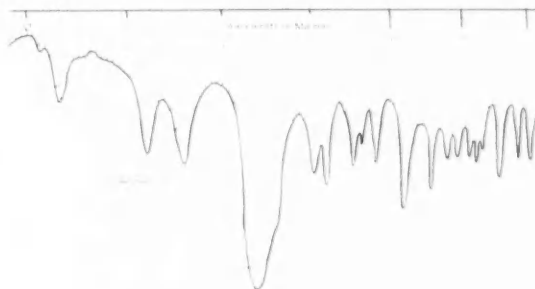
A number of compounds previously reported as having been found in Savin Oil could not be found in the fractions by infrared examination.

The accompanying spectrograms were produced on a Perkin-Elmer Model 12C IR Spectrometer.

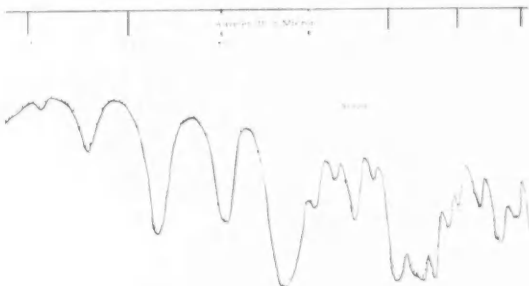
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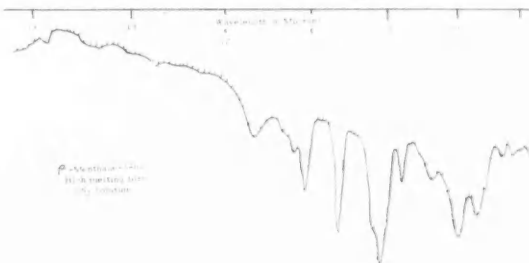
Sabinene



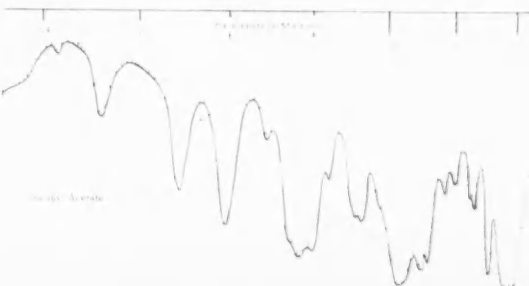
Sabinol



(-)-Menthane-4-ol, high melting form



Sabinyi Acetate



(Continued from page 44)

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Abstracts of Scientific Papers

ABSTRACTS of scientific papers presented at the December meetings of the Society of Cosmetic Chemists and the Scientific Section of the Toilet Goods Assn., begun in our January issue, are herewith completed.

S.C.C. PAPERS

New Developments in Glass Containers

THE last few years have seen a considerable increase in both fundamental and applied research in the glass field. An appreciable part of this work has been on glass strength. New experimental techniques are being developed and new facts concerning the strength of glass have been collected. Some of this information can now be applied to the manufacture and handling of glass containers.

Imperfections and stress concentrations on the surface of glass have been investigated by means of both electron and optical microscopy and metal evaporation techniques. The role of these surface flaws in the breakage of glass has been more accurately established and means have been developed to reduce their effectiveness.

Very thin coatings of various materials have been applied to glass surfaces to preserve them from damage. Sulfur, various waxes, silicones and polyethylene have been used and their relative advantages and disadvantages have been determined. Impact, internal pressure and thermal shock tests made before and after simulated service tests have been used to establish the degree of protection offered by the coatings.

The resistance of glass to chemical attack has also been studied in more detail recently. The effects of various products on chemical durability are better known and chemical treatments are available which increase the resistance of glass to chemical attack.

Although there have not been many new developments in the field of colored glasses, colored plastic coatings on glass have given a much greater range of color possibilities. Considerable interest in protection of products against ultraviolet radiation has led to several new methods of protection, as well as a more thorough knowledge of the limits of the older methods.

Progress in container design and improvements in glass handling have made possible the production of lighter weight containers. Correct container design has also become more important in the growing field of aerosol bottles.—*Abstract of S.C.C. paper by William R. Prindle.*

Chemical Applications for Ultrasonic Waves

ULTRASONIC waves are capable of producing both chemical and physical effects of interest to the chemist. The majority of the applications for ultrasonic waves in chemistry involve the liquid state. Ultrasonically produced cavitation is the agency for most of the effects in liquids. Typical of the sonochemical changes produced through cavitation mechanisms are the formation of hydrogen peroxide in water, the decomposition of simple organic compounds, the degradation of polymers, and ultrasonically induced polymerization. For the most part, these chemical effects are only of laboratory interest because of the poor yields. The promise for ultrasonics in industrial chemistry lies in the physical effects and

their applications to processing. These include: (1) the production of colloidal suspensions in liquids, (2) the degassing of liquids, (3) the increase of heat transfer and mass transport in gases and liquids, and (4) the production of the crystallization of various compounds. Many of the above applications are dependent on the sonically induced cavitation.

Various applications will be discussed in terms of the availability of equipment, the mechanisms for the effects, and feasibility.—*Abstract of S.C.C. paper by Ernest B. Yeager.*

Cosmetic Knowledge Through Instrumental Techniques

ISTRUMENTS are developed for the convenience of man. They are designed to give him information more conveniently and more accurately than he could get the same results by hand. An instrument is a measuring device, and can give information on three levels:

First, it can give information on bulk properties; secondly, on molecular properties; and thirdly, on atomic properties. Most instruments fall into one of these three categories.

The new physicochemical techniques, by filling in gaps in our present knowledge, can be used to solve problems and guide research. Unless one is aware of all the developments of the chemical field, there will be serious time lags before they are generally applied in the cosmetic field. It is very important to be receptive to ideas from apparently unrelated fields of scientific endeavor.

The cosmetic field traditionally, because of its dependence upon subjective terms, has been very difficult for the scientist. Only comparatively recently has he been getting the tools he needs for the job.

Apart from uses in analysis, the new instrumental techniques are very helpful in determining the effects of cosmetics upon hair, skin and teeth. Data are required to show functioning of processes, or the absence of undesirable effects, or the creation of desirable effects.

An instrument is designed to fill a gap in knowledge. The instrument for a given application is chosen depending on the type of knowledge that is needed to solve a given problem. The area where we need the knowledge governs the design of the instrument, rather than the instrument's governing the field of application.—*Abstract of S.C.C. paper by Everett G. McDonough, Donald A. M. Mackay, and Murray Berdick.*

The Electron Microscope—A Tool for the Study of Hair

ALTHOUGH the electron microscope has been in use for a number of years, it has seldom been applied to the study of human hair. It represents a much needed addition to the techniques of light microscopy and x-rays since it bridges the large gap in magnification between these two methods. Three basic sample preparation techniques of replication, ultrathin sectioning, and degradation are described and the kinds of problems to which these techniques may be applied are discussed. Several electron micrographs are shown to illustrate what can

(Continued on page 72)

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Packaging and Promotion



1.



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3.

1. PRINCE MATCHABELLI

Added Attraction Cologne Parfume is the new co-product by Prince Matchabelli, Inc., for its Added Attraction Perfume. In the stores on March 15, the new product comes in a crown-shaped bottle. A red and gold crown and a red panel decorate the white box. It comes in two sizes, at \$2 for two ounces, and \$3.50 for four ounces.

2. GERMAINE MONTEIL

Two new lipstick colors from Germaine Monteil are Romance Pink and Pastel Rose, both for daytime wear. Romance Pink is a primrose pink with a golden hue; Pastel Rose, a warm soft rose with a touch of blue. Germaine Monteil lipsticks contain Lumium, a patented ingredient which is said to reflect light. Matching cream rouge comes in the same new hues for \$1.50. The lipsticks are \$2, with refill for \$1.

3. J. B. WILLIAMS

The J. B. Williams Co. has streamlined its Skol sun products line to take advantage of new packaging techniques and new marketing trends. In modernizing the packaging, plastic tubes and bottles are being used to add visual consumer appeal and ease in use. Window cards and acetate window streamers, counter cards, package toppers and counter displays are available without charge.

4. MAX FACTOR

Max Factor & Co. is introducing into this country its successful European lipstick shade, "Roman Pink." It is a shell pink color which is said to have started a trend to lighter, more delicate, more ladylike make-up in Europe. It will be presented with intensive magazine advertising in April. Various display material will be featured in the promotion, including a counter display with a stylized bust of a Roman statue on top of a column, which may be used to exhibit the lipsticks.

5. BRISTOL-MYERS

Bristol-Myers is launching a new package for Ban, which it says is the number one deodorant nationally in dollar-



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volume sales. The three color, cellophane wrapped, die-cut carton is designed to afford maximum point-of-sale display with minimum use of shelf space and complete stocking ability. The window in the carton allows customer inspection without product handling.

6. LANOLIN PLUS

A combination "Hair Care Special" consumer package is currently being distributed to the drug trade by Lanolin Plus, Inc. Shampoo and hair dressing, a regular \$1.60 value, are selling for \$1.29. The offer is being promoted as the "Bert Parks TV Special" because of heavy TV feature-advertising on the Bert Parks TV show, and because of the point-of-sale follow-through featuring his picture on the display package.

7. HOUBIGANT

Houbigant, Inc. is currently presenting a merchandising innovation with its offer of flowered gloves for gardening and housework. The premium comes with the purchase of a bottle of Quelques Fleurs hand lotion and eau de toilette in a blue and white gift box for \$3.75 plus tax. With each purchase the customer receives a free "how to" color booklet on flower arrangements.

8. TINKERBELL

A real fur muff tipped with a rose bud is the container for Tinkerbell sachet. An attached bright red loop makes the muff easy to place on a hanger or closet hook, or keep in a drawer. The muff itself is packed in a miniature hat box decorated with Tinkerbell's floral motif. The price is \$1.25.

9. HELENA RUBINSTEIN

The latest beauty package from Helena Rubinstein is called "Magic Illusion." It contains "Conceal," a creamy make-up accessory for masking which spreads on like lipstick; and "Silk-Tone" foundation. Color and texture of the two are chemically mated. The package comes in three shades: fair, medium and olive. The cost is \$3; the delivery date April 1.



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9.

AEROSCRIPTS



Jack Pickthall

Patent Battle

WE have followed with interest the aerosol shave-cream patent battle. There seems to be a piquant situation in England where the Colgate patent is cited as late 1954 and the Carter as May 1956. If the patent is valid in England then who owns it?

To the best of my knowledge, patents have not worried fillers and other interested parties where low-pressure aerosols in glass bottles are concerned and it was as recent as the beginning of February 1957 that my attention was drawn to Patent Specification 762405. Details of the London Patent Office Specification are given as follows:

Date of application and filing Complete Specification: May 27, 1954. No. 15675/54.

Application made in United States of America on June 10, 1953.

Application made in United States of America on May 5, 1954. Complete Specification Published November 28, 1956.

This apparently leaves the objection date open until 28th February, 1957. The claims are:

1. A liquid mixture, which when stored under pressure in a suitable container having an atomizing nozzle will be atomized by releasing the pressure, and which contains an alcoholic constituent comprising one or more saturated aliphatic monohydric alcohols containing not more than three carbon atoms, and one or more low boiling point propellants which may be either a fluorinated or fluorinated and chlorinated low molecular weight saturated aliphatic hydrocarbon containing not more than two carbon atoms, such as dichlorotetrafluoroethane, or butane, or mixtures of

butane with said fluorinated or fluorinated and chlorinated aliphatic hydrocarbons, and which, if desired also contains an alcohol-soluble ingredient to be dispensed such as a perfume, the concentration of said alcohol being at least 75% by volume and the propellant constituting from about 10 to about 35 per cent by volume of the liquid mixture, said liquid mixture when in a confined state exerting a pressure slower * than 25 p.s.i.g. at about 70°F.

2. A mixture according to claim 1, characterized therein, that the concentration of the alcohol, when said alcohol is isopropanol, is at least 75% by volume, when ethanol is used is at least 85% by volume, and at least 90% when using methanol, and that the propellant has a boiling point not exceeding 70°F. at one atmosphere.

3. A mixture according to claim 1 or 2, characterized therein that said mixture comprises the alcohol-soluble perfume ingredient, the ethanol having a concentration of about 87% by volume and dichlorotetrafluoroethane being present in an amount of about 25% of the mixture.

4. A mixture according to any of the preceding claims, characterized by exerting a pressure at normal room temperature of between 11 and 15 p.s.i.g., with the liquid mixture containing ethanol solvent having a concentration of at least 85% by volume, a product dissolved in said alcohol, and dichlorotetrafluoroethane in an amount constituting from about 15% by volume to about 30% by volume of the liquid mixture.

5. Liquid mixture according to any of the foregoing examples.

6. A container containing a liquid

mixture as claimed in any of the preceding claims, said container being provided with an atomizing nozzle and a valve for releasing pressure within the container through the atomizing nozzle thereby atomizing the liquid mixture.

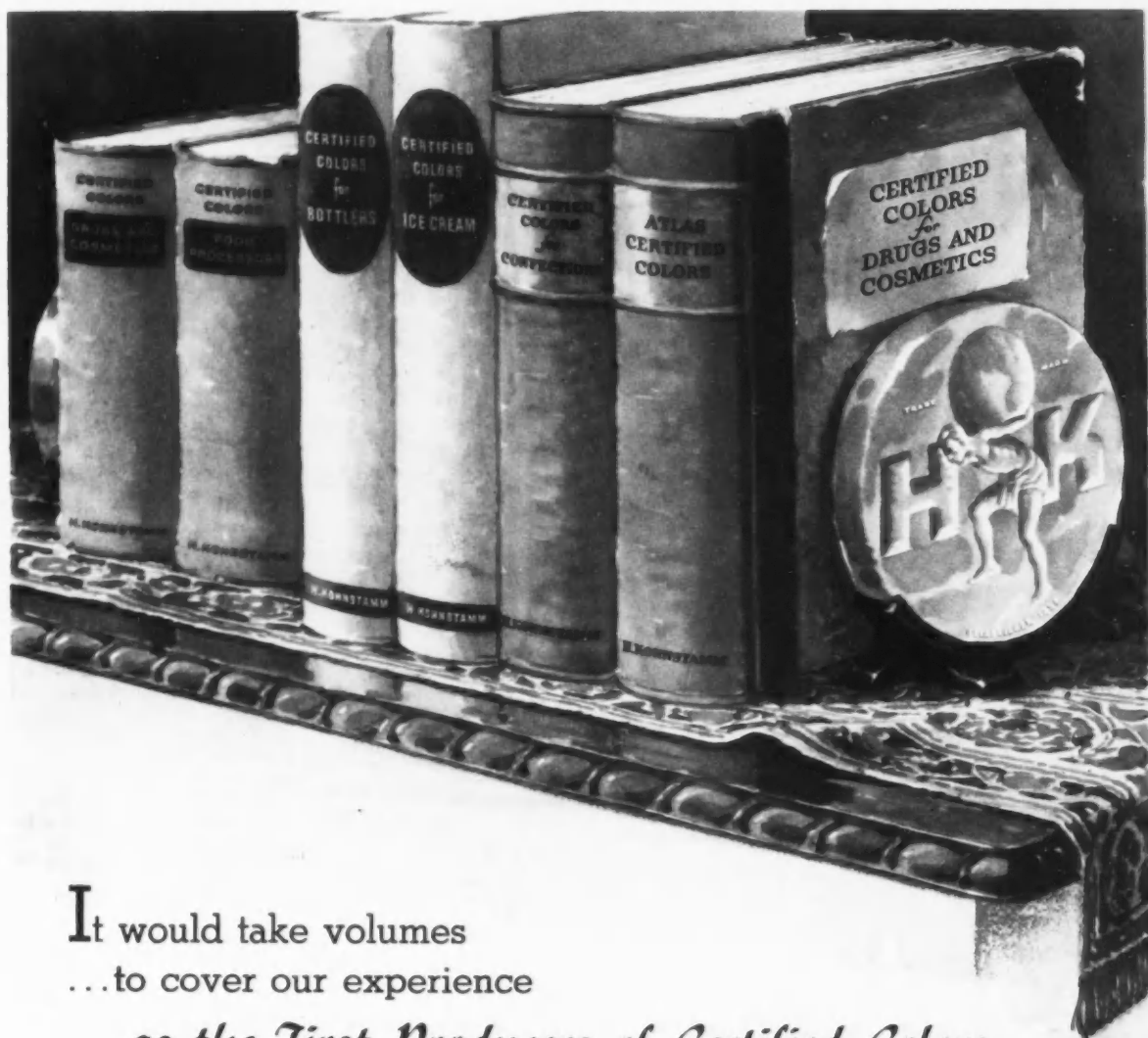
Like most patents, 762,405 takes some wading through. At first glance, one forms the opinion that the patent specifies a minimum of 75% by volume of an alcohol, the balance being propellant. This is not the case however. The figures of 75%, 85% and 90% refer to the strength of the alcohol e.g. isopropyl alcohol at 75% strength, ethanol at 85% and methanol at 90%—all by volume and the diluent presumably being water.

The amount of propellant is clearly specified as from about 10 to 35 per cent by volume—a mixture with alcohol or alcoholic solution when in a confined state exerting a pressure lower than 25 p.s.i.g. at 70°F. Let us consider a mixture of 35 parts by volume of tetrafluorodichloroethane and 65 parts by volume of ethyl alcohol, a mixture which would come within the specification. This would be roughly equivalent to 50% of propellant and 50% of alcohol by weight. Such a mixture would certainly give a pressure below 25 p.s.i.g. and an acceptable spray. In the lower pressure claim, 30% of tetrafluorodichloroethane by volume is equivalent to about 45% by weight.

It does appear that many preparations on the market are covered by the patent. Hair lacquers and sun-tan preparations do not appear to be affected when packed in metal dispensers, as the pressures are normally of the order of 35 p.s.i.g.

There are, of course, patents in the United States for the three-phase systems with and without the addition of boiling-stones and we wonder whether

* Actually occurs in the Patent Specification.



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application has been made in this country and if not, whether we can expect it in the near future.

PropellAnt vs. PropellEnt

DETERMINED to investigate this question to the bitter end, I came to the conclusion that it was a case for The Philological Society and consequently put the case to them. I give you herewith the first letter from the Secretary:

"Thank you for your letter of 8th November, which I will put before the Council of this Society at its next meeting on 8th December.

"Meanwhile, speaking for myself, I should say that 'propellent' was the regularly derived form from the Latin participle 'propellent(em)', cf. 'astringent'. However, the fact that some words come through French with 'ant', as in 'attendant', and that there has sometimes been refashioning after Latin, makes for uncertainty, and we get such cases as 'pendant/dependent', sb. and adj., and 'dependant/dependent', sb., but 'dependent', adj.

"In spite of the fact that the OED gives under 'propellent a. and sb.' 'also erroneously -ant', it looks as if 'propellant' (sb) were established, or becoming established, in describing explosives, and I do not think anything would be gained by trying to insist on 'propellent' for this use."

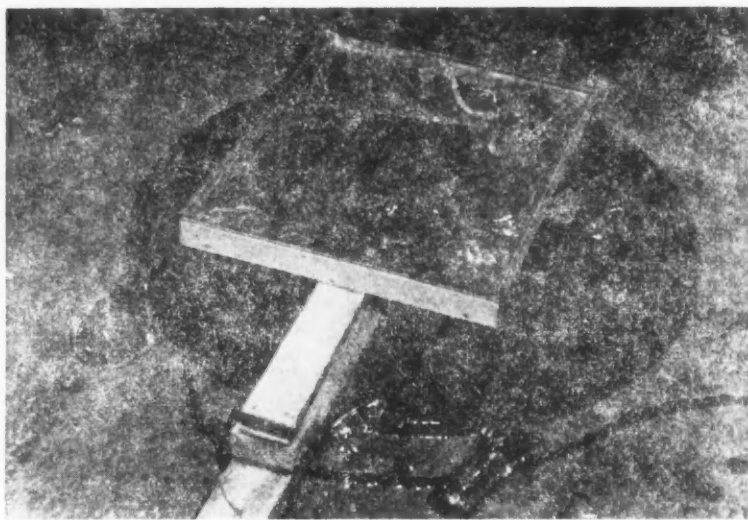
The Council's decision given to me some three weeks later reads:

"I have now been able to refer your question about the spelling of 'propellent/propellant' to my Council. The Council in fact confirms the opinion I expressed to you in my letter of the 16th November, viz., that the spelling 'propellant' must be considered to be established for the noun used in describing explosives."

This completely confirms my own previously expressed opinion. It seems obvious that one must differentiate between the adjective as for instance "the propellant action of a substance" and the substance in question i.e. the *propellant*. Two words are obviously required and just as obviously the adjective is *propellent*. This leaves 'propellant' as the word to be used when speaking of the halogenated hydrocarbons used in aerosols.

Photographic Technique

DURING the writing of an article on uncoated glass aerosol bottles, it was necessary to take photographs which were designed to show the explosive violence of a breaking aerosol bottle in comparison to the much less violent action of a breaking carbonated beverage bottle. It is possible that the photographic technique may be of interest to people connected with aerosols and maybe other folk as well. The laboratory built dropping base is illustrated here-



Explosive Action Caught by Photo

with. This particular photograph shows the debris after dropping a bottle of soda-water.

The wooden platform (9 by 10 inches with the shorter side towards the camera) was freely hinged from a fixed arm. To the other end of the arm was attached a micro switch on which the platform could rest.

The apparatus available to the operator consisted of a small electronic flash outfit and a fully synchronized camera, 35 mm. single-lens reflex. It was decided to use the 'open flash technique' i.e. the camera was opened in a darkened room and the flash operated and the camera closed. It was thought that the delay in operating a relay to fire the shutter and flash would introduce too long a delay between the bottle hitting the firing mechanism and the shutter firing. This subsequently proved to be incorrect.

The set-up was as follows. The bottles were dropped from a cradle, 6 feet 6 inches above the platform. The bottles were tipped from the cradle by pulling a string well away from the danger area.

The platform was loaded so that an extra 50 gms. operated the switch which on contact operated the electronic flash. The additions made to the platform took the form of flat metal plates.

The camera was located 3 feet from the platform for the close-ups, and 6 feet to cover a greater area of spread. It was placed behind a one-half inch glass plate 3 feet high and 6 feet wide (none too thick in the operator's opinion). The flash was also shielded from flying glass by means of a clock glass. The sequence of operation proceeded as follows: Place bottle on dropping cradle—charge the flash—lights out—open camera—drop bottle and finally close camera.

The first trials produced a picture of the bottle before breaking so a time delay had to be introduced. This was done by adding a small projection to the far side of the platform. This projection could rest on a lightly fixed upright which contained very shallow horizontal

grooves, thus the platform could drop a controllable distance before operating the switch. This proved extremely successful and any desired delay could be introduced and results were consistent and reproducible.

Trouble was experienced during the breaking of the mineral water bottles due to premature firing of the flash, which occurred each time just as the bottle left the cradle. This proved to be due to the damp conditions following the breaking of a beverage bottle, the standardised sequence of operations resulting in the flash operating at the same point each time. Sealing the micro-switch in polythene overcame this trouble. Flash duration was 1/1000 second; film, Ilford H.P.3.

Propellant Prices

I HAVE been having a look at some of the English prices for propellants and these may be of interest to American readers. There are four sources of supply—Freons, American; Alkofreons, Italian; Aretons and Isecons, both British. Freons 11 and 12 are no longer available as these chemicals are now freely available from the home producers. Understandable, but decidedly tough on our old friends.

Trichloromonofluoromethane costs between 2/8d. and 2/9d. per lb.

Dichlorodifluoromethane is about 2/9d. from Italy and between 2/10d. to 3/2d. from home sources.

I. C. I. suggest a price of 12/6d. (still in experimental stage) for dichloromonofluoromethane and these people offer monochlorodifluoromethane at 8/3d. per lb.

The American trichlorotrifluoroethane is 8/-d. against an English figure of 18/-d. (small quantities).

The Americans have a distinct edge with dichlorotetrafluoroethane at 8/-d. against 10/1½d. for the English grade. The second English company suggest their figure will eventually beat the American price by a good margin.

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I-Quiz

This Month's Quiz Master



H. Polkinhorne
Chief Research Chemist
Yardley and Company, Limited
London W.1, England

QUESTION I. *In selling a world wide market, does a cosmetic item have to be specially formulated for each market or climate?*

ANSWER. Basically no—for by wise choice of raw materials and careful balancing of formulation, a satisfactory compromise can be achieved in a product which has a cosmopolitan appeal. In the case of coloured products, for example, face powders, lipsticks, etc., the range should be sufficiently comprehensive to include fashionable colours for all markets.

QUESTION II. *In England can one get alcohol other than methylated spirit for perfumery use that does not have the objectionable odour?*

ANSWER. Provided full excise duty is paid, it is possible to obtain Pure Ethyl Alcohol, which costs the equivalent of \$11.00 a litre. The best grade of duty free industrial alcohol available known as Q. Spirit is pure ethyl alcohol denatured with pure methyl alcohol and quassin.

HOW BUSINESSES SUCCEED

THE following, published by the well informed *Chemonomics*, tells why businesses fail, which is of course the explanation of what should be avoided in order to have businesses succeed. The evident causes for business failure in the United States in 1955 were:

Neglect	3.8
Fraud	2.3
Inexperience	91.4
Disaster	2.2
Unknown	0.3
	<hr/> 100.0

Flavoring Materials and TOXICITY



MORRIS B. JACOBS, Ph. D.

It is suggested that a "Flavor Materials Foundation" be established for the gathering of unbiased and authentic data on the toxicity of flavoring materials

OVER a period of years the status of pending legislation concerning food additives has been discussed in this section of the AMERICAN PERFUMER AND AROMATICS. Some of the bills introduced in past Congresses will be reintroduced in this session of Congress, very likely with some changes, but it is apparent that the Food and Drug Administration will pursue a more active role in attempting to gain enactment of a measure to control the addition of adjuvants to foods. Members of its staff have prepared a draft of a proposed law which it would like to see enacted and this draft has been submitted to other governmental agencies for their consideration and suggestions.

The flavor industry should be interested in two aspects, at least of this control bill. These were re-emphasized recently by John L. Harvey, Deputy Commissioner of the Food and Drug Administration, in a talk which was given before the New York State Bar Association, Food, Drug, and Cosmetic Section. These two aspects are first insistence on administrative enforcement, that is, that no adjuvant or additive be used in a food unless it was approved for use by the Secretary of the Department of Health, Education, and Welfare and secondly, objection to any grandfather clause.

Grandfather Clause

With respect to the latter Mr. Harvey stated in his address, "... we are opposed to a blanket grandfather

clause that would permit the use for an indefinite period of all additives now employed, because some of them are not generally recognized by the experts as safe. We think it would be improper to sanction the indefinite use of an inadequately tested chemical simply because it has been used in the past.

"We think it would be proper to give industry a reasonable time after legislation is enacted in which to complete such testing as is necessary on chemical additives then in use which have not received informal clearance."

One must always remember in a consideration of any bill with or without a "grandfather clause" that Sections 402 and 406 of the Food, Drug, and Cosmetic Act of 1938 will still govern the addition of any substance to foods. Clause (2) of Section 402 states: "A food shall be deemed to be adulterated . . . if it bears or contains any added poisonous or added deleterious substance which is unsafe within the meaning of Section 406; . . ." and Section 406 in effect grants the Secretary the right to evaluate such substances "as he finds necessary for the protection of public health. . . ." Hence even if a substance or a material has been used and subsequent information comes to light that indicates that it is not harmless in the amounts utilized, it can be banned.

As a matter of fact, the industry itself may probably take action to avoid the use of a substance or a material, even before a governmental agency steps in, if its own

FLAVOR SECTION

investigations indicate that a given material is deleterious. Actually this is what happened in the instance of coumarin.

The Problem

The flavor industry, flavor chemists, and flavorists must come to grips with this problem. This is not to say that nothing has been done in the past for the Scientific Research Committee of the Flavoring Extract Manufacturers Assn. of the United States has done some work in connection with the gathering of statistics on volume use of flavoring materials, order of importance of flavoring materials, and levels of use of such materials in foods and beverages.

The core of the problem, that is the question of the relative harmlessness or toxicity of a given material, has, however, not been attacked either by actual toxicological work or by a survey of the literature (to establish the present status of the toxicological work in this and related fields that has already been done), except by individual interested flavor chemists. It may well be that some flavor firms have made such investigations but very few have been published in full.

Most books dealing with flavors and flavoring materials do not even mention the topic of toxicity. In my book, *Synthetic Food Adjuncts*, I do discuss the subject briefly and in my courses in this field which I formerly conducted at the Polytechnic Institute of Brooklyn, I used to discuss the subject at greater length but, I must admit, the stress was more on the fact that the portal of entry of flavoring materials, namely, through the digestive system reduced the danger of toxicity of any flavoring materials used relative to other portals of entry. I also put stress on the fact that the quantity of flavoring material ingested was small. Nevertheless, here too, I pointed out the lack of available information.

On other occasions I noted the lack of information and/or indifference to information that was available. For example, in the instance of coumarin which I discussed in an article in the *AMERICAN PERFUMER*, 62, 53 (1953), I pointed out that the physiological response of this substance had been studied as long ago as 1855, long before it was synthesized.

Other instances in which I discussed the toxicity of flavoring materials may be found in my article, "Toxicity and Flavoring Materials" in *AMERICAN PERFUMER*, 62, 131 (1953) and in some of my articles concerning synthetic and natural sweetening agents.

Industrial Hygiene Aspect

One of the aspects of the relative toxicity of flavoring materials which is seldom considered is that there is an industrial hygiene aspect. In the classes which I conducted at the Polytechnic Institute, mentioned above, I stressed that in the actual manufacture of flavors sufficient of the aromatic chemicals and even natural flavoring materials, for instance vanilla beans, may be handled so that the workers coming in contact with them must observe the precautions required in any industrial operation in which organic substances that are volatile, etc., are handled.

Methods of Approach

My general feeling in discussing this problem with those in the flavor industry is that they are in favor of a wait and see attitude. I get the impression that they do not even want the topic of toxicity of flavoring materials discussed as if mere discussion will bring attention to a subject they would prefer to see buried or ignored.

Such negative attitudes are of little merit. The flavor industry, flavor chemists, and flavorists must realize that there are some persons and organizations that are in favor of the complete prohibition of the use of all "synthetic" flavoring materials in foods. Such persons and organizations often advocate the use only of "natural" flavoring materials as if the term "natural" and "safe" are synonymous.

While not as extreme in its contentions as those mentioned in the preceding paragraph, it is well to note some of the conclusions adopted at the First Symposium on Foreign Substances and Synergistic Materials in Foodstuffs which was sponsored by the Bureau International de Chimie Analytique and the Commission Internationale des Industries Agricoles which was held in Vienna in 1955:

"1. It is proper to include under 'Chemical Additives' all substances which are not originally normal constituents of foods, but are added to them in view of improving their appearance, odour, flavour, consistency or conservation properties, or which may also be incorporated with them as impurities in the course of the various technical preparation processes.

"Addition substances do not comprise Vitamin C, Common Salt, Vinegar, Alcohol, Sugar, as well as the other substances which have always been considered themselves as alimentary substances owing to their nutritive or stimulant value.

"2. As a rule, chemical additives should be used only:

"a) when and as long as their innocuity to public health may be considered by qualified experts as presenting a sufficient degree of probability.

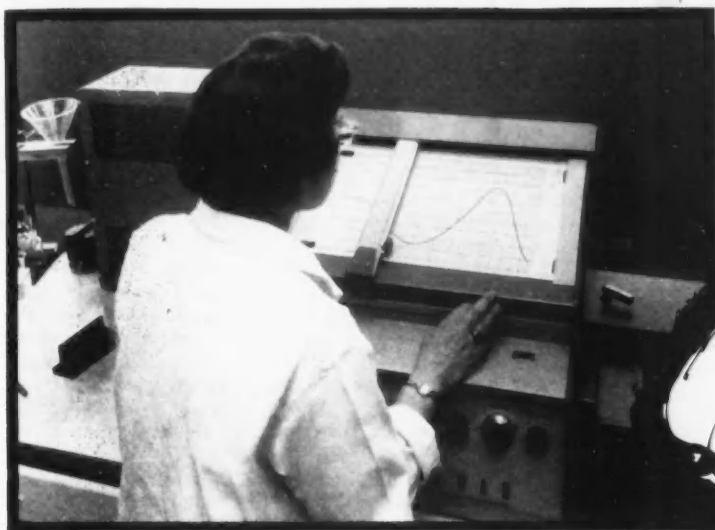
"b) when and as long as their use appears to be unavoidable and to serve the general welfare, taking in consideration the existing economical conditions.

"c) for the mentioned purpose and at the most possibly restricted doses.

"d) on the understanding that the addition shall not result in misleading the consumer as to the real value of the alimentary product, its freshness, or as to any unfavourable properties that it may possess.

"3. As to the staple foods that every one needs every day, the purchaser is entitled to expect that there enters nothing but natural products in their composition. Consequently, the use of chemical additives in these foods, even if due notification of their presence is given should not be permitted. In the import of this paragraph, the following are considered as staple foods: Milk and dairy products, flour and bread, meat and meat products, lard or pork fat, crude fruits and vegetables, oils.

"4. In any case, may only be used the chemical additives namely specified by the responsible authorities. The use of these substances shall be restricted to the foods for which they have been permitted, and providing



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FLAVOR SECTION

that their purity corresponds to the prescribed specifications.

"Studies must be entered upon in view of the elaboration of an international convention for the establishment of 'positive' lists of chemical additives which may be considered as tolerable, in the present state of our knowledge concerning this subject.

"5. In any case, the presence of added chemical substances in foods should be notified to the purchaser on the label of the product in perfectly clear and comprehensible terms.

"6. In the case of the existence on the market of an alimentary product containing a regularly declared chemical additive, it should be possible, when setting for sale the same alimentary product in the natural condition (without additive), to specify explicitly in the publicity concerning this product, that it does not contain any chemical additive. This in view of facilitating to the purchaser the possibility to choose for himself."

Some of these conclusions must give us pause. It is clear from such statements that the efforts to control the use of flavoring matters in foods is international in scope.

Solutions

The flavor industry has expressed itself forcefully in favor of all controls necessary to protect the public health. It must recognize, however, that many have

peculiar notions as to what actually may harm the public, hence it should put itself in an adequate position to protect the public and itself from persons and organizations who would impose unreasonable and unrealistic restraints and regulations.

To do this, it does not appear wise to rely on any agency directly under its own control as the Scientific Research Committee of the Flavoring Extract Manufacturers Association of the United States, which in effect would be to use a committee principally composed of flavor chemists working in the industry. Such an objection would also be levied against such an organization as the New York Society of Flavor Chemists but with much less reason.

A more realistic approach would be to set up an independent "Flavor Materials Foundation" or more broadly a "Food Additives Foundation." The first task of this foundation would be to make as complete a survey as possible of the available literature on the toxicity of flavoring materials, the volume of use of flavoring materials, the order of importance, and the levels of use in foods and beverages. Once such a comprehensive survey is performed, the gaps in our knowledge will be clearly defined. The second task would be to arrange for the toxicological examination of those materials of first importance about which we do not have sufficient information. Finally materials of lesser importance can be tested. In this way industry will have adequate and unbiased information on which to present its views for the enactment or modification of legislation.

Food Research Laboratories Establishes Western Branch

Food Research Laboratories, Inc. announces the establishment of a western branch in Los Angeles under the direction of Dr. B. H. Ershoff, prominent nutritionist and biochemist who for many years has been associated with the University of Southern California. The office is located at 9331 Venice Boulevard, Culver City.

Phillip De C. Kratz Joins van Ameringen-Haebler

Phillip De C. Kratz has joined the technical and development staff of the Alva Flavors Division of van Ameringen-Haebler, Inc. Former affiliations include the Hoffman Beverage Co. and the Borden Co., where he was head of the Flavor Department. During World War II, Mr. Kratz figured prominently in scientific development work for the government, and is the author and co-author of a number of technical papers devoted to the food and beverage field. He is past Chairman of the New York Institute of Food Technologists and is currently one of the National Councilors for the I.F.T. as a professional member. Mr. Kratz is also an active member of The American

Chemical Society, American Assn. for the Advancement of Science, and Phi Tau Sigma, the honorary society of Food Science. He holds degrees as Master of Science in chemistry and physics as well as in chemical engineering from Lehigh University.

Volume XV Completes Largest Technical Book

The largest technical book ever published in America is complete with the publication of Volume XV of the "Encyclopedia of Chemical Technology," issued by Interscience Publishers, Inc. The project, which was 13 years in the making, has produced a 15-volume book consisting of 13,805 pages of text and a comprehensive index. The publisher says that it is the only exhaustive compilation of American technical practice in the field of chemistry, and fills an important gap in American technical literature.

Latchford-Marble Glass Changes Company Name

The Latchford-Marble Glass Co., largest independent manufacturer of glass bottles and jars on the West Coast, is now known as the Latchford Glass Co.

TRADE LITERATURE

An X-ray Spectrograph Chart showing characteristic X-ray beams for elements from Magnesium (Atomic #12) to Californium (Atomic #98) is available from North American Philips Co., Inc. It is suitable for wall display and is an aid to understanding the theory and application of X-ray spectrography. It is also useful in handling actual problems.

The French Glass Co. has published an illustrated brochure of its crystal perfume bottles in new designs.

Water Analysis, technical and engineering service bulletin number 11 from the Allied Chemical & Dye Corp., contains separate sections on the analyses of various types of waters, and also numerous tables of analytic data, conversion factors and turbidimetric and color standards, and a special section on the preparation of reagents, indicators and standard solutions used in analyses.



The Origin of Flavor

JAMES J. BRODERICK



A general pattern in nature's
production of essential oils revealed . . .

ESSENTIAL oils in bulk are so familiar to us in the industry that we may be inclined, at times, to show insufficient interest in their formation or origin. Probably all of us frequently refer to the excellent treatises on essential oils but all too often the motivation for a more thorough knowledge of their composition is the substitution of more economical aromatics for the natural essential oil. We are also inclined to think of essential oils in terms of commercially available products and sometimes do not consider as essential oils the fruit oils, for example, that obtained in 0.0035% yield from apple parings by Power and Chestnut¹ or the oil isolated in 0.0013% yield from Lacatan bananas by Von Loesecke².

We recognize immediately that these two essential oils are not commercial possibilities not only because of low yields but because they are distributed more or less uniformly throughout the fruit making their removal difficult. Most commercial essential oils are obtained in yields of from a few tenths of one percent up to fifteen or twenty percent and are usually present in droplet form protected by cell walls from further change or deterioration. However, it is the more unstable and difficult to obtain fruit oils, for example, that the flavorist desires to know more about.

The question that has always intrigued us is "how did the essential oils get there?" If we better understood the derivation and the reasons for the composition of those essential oils found naturally in fairly large amounts we might be better able to understand the derivation and composition of those oils that nature produces less lavishly.

It might be wise, in order to keep our thinking orderly, to first answer the question "why are they there?" To those of us who feel there is an overall plan and

intelligence in nature, proposing *all* the reasons may seem presumptuous. Several obvious reasons (which certainly do not represent the main function of essential oils) are to delight the senses of smell and taste of man and beast; to repel animals in some cases, attract insects and encourage fertilization in others and to repair man's ills in still others. The ingenuity displayed in their use by many of the purchasers of essential oils may merit consideration in proposing reasons for their existence.

Metabolic Process of Formation

According to Huttleson³ essential oils are formed during a metabolic process whereby energy is supplied for the growth of the plant. The precursors of essential oils are complex molecules that release energy during decomposition. Their decomposition products often collect in dead cells and are then of no further use in the growth of the plant.

Trieb's⁴ made the interesting observation that in plants the end products of this type of metabolism are *either* essential oils or alkaloids. Products in daily use for their alkaloid content as well as their flavor are coffee, tea, cocoa and tobacco. It is interesting to observe that these products, before processing, have little or no desirable flavor. They seem to support the hypothesis of Trieb's that during plant growth alkaloid rather than essential oil was the by-product of decomposition. One or more additional processes are performed by man on these products to cause additional decomposition not necessary for plant growth but necessary to develop desirable flavors. Tea, cocoa and tobacco are fermented; cocoa and coffee are roasted,

FLAVOR SECTION

while tobacco is smoked or cured in a number of ways.

The production of the alkaloid, nicotine, in the case of tobacco as against the aromatic alcohol, menthol, in the case of peppermint might be likened to some of the fundamental differences between man and the ape family. A closer relationship between the production of an aromatic ketone, l-carvone, as the primary aromatic of spearmint vs. the menthol of peppermint might be compared to the differences between two races of man. The control of the end product, in plant as well as man, lies in the chemical makeup of the genes that combine to eventually form the finished plant or animal.

Gene-Enzyme Relationship

Dawson⁵ has postulated that there is a gene-enzyme relationship in plant and animal metabolism. If this is true then the genes are the reason for the differences and their enzyme relations are what control the differences. Indeed we know that plant spoilage is caused either by conditions that kill or hinder enzyme action and/or conditions favorable to other enzyme systems that may be present or that are added accidentally. These secondary enzyme systems then cause reactions to proceed more rapidly than the normal ones—when conditions are made favorable for them.

The gene-enzyme relationship could readily explain the proposal of Kremers⁶ who as early as 1922 proposed a scheme for the development of the aromatics found in spearmint and peppermint oils from common precursors. Although spearmint is spearmint wherever it is grown, all of us are familiar with the differences in plants caused by changes in location. These differences may be due to changes in temperature, rainfall, soil nutrients, etc., which, among other things, can favor one enzyme over another. A striking example is Tahiti vanilla which cures so markedly different from Mexican and other vanilla varieties. Differences such as these, which occur in the same plant in different locations, may also be due to enzyme systems native to the soil in a particular area.

The role of enzymes of various types either as an integral part of the plant metabolism or introduced by accident or design is becoming to be recognized more and more as the tools whereby the complex essential oils are formed. Essential oils are decomposition products of metabolism in normal plant growth or of spoilage when other enzyme systems are favored. The aromatic products released from the more complex materials, if reactive, may in turn interact, polymerize, or be subject to the normal effects of air oxidation, etc. The original aromatic formed must necessarily have initially originated from protein, fat, or carbohydrate.

How can this thinking aid us in uncovering some of nature's aromatics? Although we do not know the chemical structure of enzymes we do know what results to expect from a given type and can learn to recognize those aromatics that are formed from protein, fat or cellulose breakdown, etc. Knowing some of the aromatic end products of cheese, for example, and thus recognizing that its flavor is the result of fat and protein decomposition, we can at least surmise what else may be present from the composition of the fat and protein and the type of organism responsible for specific types of enzyme action.

Since most essential oils are complex, it might seem at first glance that this approach cannot supply us with any real knowledge of aromatic derivation. Triebs¹, however, pointed out that the essential oil of the roots, trunk and leaves of a plant are primarily one aromatic chemical. This may seem like an oversimplification but a most interesting series of experiments performed by Fujita⁷ lends credence to the proposal. His work centered around the introduction of a single aromatic to a living plant and then recovering the end products after a time lapse. For example, he fed d-citronellal into the sap of living *Ficus retusa* L. and after 18 months recovered up to 30% of the d-citronellal as d-citronellol, geraniol, nerol and l-limonene. In a like manner citral was converted into geraniol, citronellol, methyl heptenone and d-methyl heptenol.

Thus we can see how a single aromatic formed as an end product of plant metabolism in the roots, trunk or leaves of a plant can be acted upon by the enzymes present therein. (The primary purpose of the enzymes is to control the life and growth of the plant. However, if non specific in this function such as oxidase, esterase, hydrogenase, etc., they will act upon all materials present that are susceptible to their action.) Depending on the number and type present or that enter from external sources, a simple or complex essential oil results. Triebs¹ also pointed out that the essential oil of the seed is generally of more complex composition. If we accept as fact the gene enzyme relationship theory, then it is only logical for the seed, which is the source of the plant's characteristics, to contain all the enzymes necessary for the plant development and thus necessarily deposit a more complex essential oil.

To further the argument for the possibility of a single aromatic precursor in most parts of plants we can cite the essential oils obtained from almond, wintergreen, and mustard. All these oils are predominately one aromatic because they are protected in the plant from the hydrolytic enzyme present by cell walls. The oil does not exist as such in the plant but when the cells are crushed the essential oil is isolated from the plant material before any substantial changes can take place.

A study of the methods of production of flavor and odor by nature has, over the past few years, given us very encouraging results. This seems to be the approach that will unlock more aromatic secrets in the next few decades than the here-to-fore accepted analytical and organic approaches. Of course these will be necessary and remain as valuable tools.

In this brief discussion we have attempted to point out a general pattern in nature's production of essential oils. Additional articles will be required to explore specific examples of flavor origin.

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SOAP SECTION

Evaluating Soap Perfumes

PAUL I. SMITH



SOAPERS of long experience admit that it is extremely difficult to carry out really worthwhile appraisal of the value of a perfume additive in soap. A great deal of disappointment can, however, be avoided if certain rather pertinent facts are kept in mind. First of all, the value of a perfuming agent cannot be assessed unless it is present in the soap, that is, a perfume may, as a perfume, appear rather indifferent, but when used as a soap additive, prove very acceptable.

Another, and vitally important consideration, is that a freshly made perfumed soap may not be attractive, but the same soap when aged for a few days might be a best seller. The final and, indeed, only satisfactory test for a scented soap is to evaluate the odour during hand washing, when the bar or tablet is in contact with warm water, and to relate this to the residual odour on the hands after washing.

Alongside this, is the query as to

whether the perfume is one that is fresh and does not become sickly as a result of continual use of the soap. This psychological consideration should not be underestimated as the continued popularity of the soap may well depend upon this factor. It could very easily be as important as the discolouration potential of a perfume.

It is unreasonable to expect odours to persist for lengthy periods if the soap is unwrapped and all perfumed soaps should be packaged as airtight as possible. The odour persistence factor of the major perfuming agents varies a great deal, e.g., among the alcohols, citronella and geranium persisted for 18 months in wrapped soaps and only one month when left unwrapped.

Factors to be considered in assessing the value of a perfuming agent in soap . . . All perfumed soaps should be packaged as airtight as possible.

Probably the most fugitive of the perfumery ingredients used by soapers is phenyl acetic acid sometimes employed to impart certain distinctive characteristics to a perfuming formula. The aldehydes are also very fugitive, particularly in the presence of light and oxygen which convert them into the corresponding acids, such a change being associated with marked deterioration of the odour. It will be appreciated, therefore, that when considering the inclusion of perfumes in soap it is important first to determine the way in which the soap is to be packaged and to choose the perfume accordingly. This may appear to be an obvious reaction, but it is, nevertheless, one that is sometimes overlooked by manufacturers.

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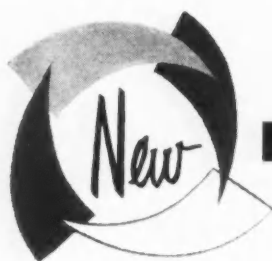
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PRODUCTS & IDEAS

PYROMILLIVOLTMETER—1

Arthur F. Smith Co. has announced the development of a new indicating pyromillivoltmeter. The manufacturer says that the instrument is an accurate precalibrated thermocouple pyrometer featuring a large, easy-to-read dial that is dual-calibrated from zero to 750 degrees F. and from zero to 400 degrees C. It is supplied with a five-foot iron-constantin thermocouple, with a thin sensing disc having external resistance of 10 ohms. It is mounted on an angled faceplate for portable use, and it may also be panel mounted.

AEROGRAPH—2

The Aerograph, manufactured by Wilkens Instrument & Research, Inc., is a gas-liquid chromatography instrument which the maker claims is economical for school and independent research use. The resolution of volatile compounds is said to be rapid and accurate in samples ranging from 2 to 100 mg. Temperatures may be increased 2°C. per minute and maintained to 1°C. by balanced heat gain-heat loss with a fixed setting on the variable transformer, so that the samples may be separated and collected in minutes without the formation of azeotropes and charted on an automatic re-

corder, says the company. The instrument may be tailored to do specific jobs by the interchange of columns with a variety of available packings. Two models are available, one with a strip chart recorder and one without.

IONIMETER—3

A new testing device from Crystal Research Laboratories, Inc. is designed to determine the ionic purity of water for laboratory and production needs. Called the Crystalab Ionimeter Model CT-21, the instrument comes equipped with a direct reading dial graduated to 0 to 50 in parts per million as NaCl. This scale range converted into electrical resistance is 5,000,000 to 0 ohms.

AEROSOL PRE-MIX SYSTEM

Mojonnier Associates, Inc. says that its "synchromatic" aerosol pre-mix combiner is a unit which combines aerosol product with propellant at room temperature and under pressure prior to refrigeration. The mixed product is then refrigerated in its combined state and filled in a single Mojonnier "electromatic" filler. The combiner consists of two air-operated pumps, one for product and one for propellant; and two weight-loaded accumulators, which

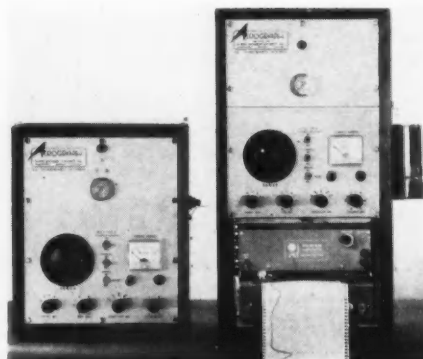
feed to measuring cylinders which are claimed to accurately meter the product and propellant into a mixing chamber. The unit is adjustable to any proportion of the two. It includes a number of intermittent actions, is air operated and electrically controlled. Advantages claimed by Mojonnier for the system are: a more accurate proportion; one heat exchanger can be used with one compressor and all the capacity of the compressor and the heat exchanger can be used on each product-combination filled; elimination of pressure tanks, weight scales and manual operation; the automatic process enables the untrained operator to obtain results achieved otherwise only by skilled help.

AUTOMATIC STAPLER

Container Stapling Corp. has introduced its Model Tap-2 automatic stapler which is equipped with two stapling heads, is air operated with fully pneumatic controls, and has no electrical connections. An automatic mechanical trip is used in place of electric power. A valving arrangement is designed to provide automatic lubrication. The model is recommended by the manufacturer for closing overlap cartons, long narrow slotted closing cartons and telescope cartons, but may be adjusted for use with regular slotted cartons.



1.



2.



3.

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Convallol

Its lily-of-the-valley odor gives compositions an extraordinarily natural and long-lasting perfume.

Your inquiries are wanted and welcomed.

HEINE & Co

601 W. 26th St., New York 1, N. Y.

(Continued from page 50)

be observed when these three techniques are applied to human hair.—*Abstract of S.C.C. paper by W. L. Courchene.*

T.G.A. PAPERS

Dermatological Evaluation of Perfumes of Low Sensitizing Index

SKIN sensitivity of perfume is a problem of ever increasing importance in marketing, in use of perfume, and perfume substance. Usually perfume dermatitis is thought of as a condition that exists in women, but today the widespread commercial use of perfume substances exposes the skin of almost everyone to the danger of perfume sensitivity. Research in Geneva, Switzerland, was directed to producing perfume of low sensitizing index by patch testing and screening carefully selected mixtures of individual aromatic chemicals or carefully controlled isolates of natural products.

These materials were formulated and re-formulated to remove proven skin sensitizers. Through these efforts, ten standardized perfume mixtures called Chemoderms® each with a different odor characteristic, were produced for use in cosmetic and pharmaceutical products.

In the United States, additional studies were conducted, and included animal sensitization tests, patch testing, and consumer usage tests. Results of guinea pig intradermal tests and repeated insult patch testing on 52 human subjects indicated that none of the Chemoderm formulations induced sensitization by skin contact.

A panel of 1029 women from different geographical locations in the United States participated in a 21 day usage test. Approximately 26% of the subjects had past histories of "perfume sensitivity," and approximately 39% had histories of dermal contact allergy. Dermal response to the Chemoderms during the use period varied from 3.3% to 10.1% in the subjects with history of dermal allergy. Among the 35% of the normal subjects that made up the panel, seven of the Chemoderms produced no dermal response, whereas three produced an incidence of 2.3% to 3.6% among the normal subjects.

The data established in these tests indicate that, statistically on the 5% level, 94.7% of the women who are sensitive to perfumes or have other allergies could use these Chemoderms without reaction. By the same type analysis, 98.9% of the women who had no prior history of perfume sensitivity or skin dermal reaction could use these Chemoderms without reaction. Accordingly, the results indicate that the Chemoderms can be considered to be relatively safe perfumes.—*Abstract of T.G.A. paper by Raymond A. Osbourn, Thomas W. Tusing, Francis P. Coombs, and Edward P. Morrish.*

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A Discussion of the Functions of a Cosmetic Research Department

SINCE most research and technical departments in cosmetic companies are small compared with those in the pharmaceutical and chemical organizations, little need be said about the table of organization as such. This is useful only when the group is so large that personal contact and direction by the director is difficult.

The nature of research within the company is necessarily, and should be wholly practical. Until such time as

fundamental problems can be exactly defined, basic research had best be supported in an academic research atmosphere. Special, short-term, non-recurring investigations are ordinarily better handled by outside consultants; only when these problems multiply sufficiently will it be profitable to set up facilities within the company to handle them. The over-all consultant, presenting an outside point of view, can often act as a useful catalyst.

The technical group, led by the director, has a number of important functions, but some are not exploited adequately. This seems still to be the case with respect to promotion—ideas for new products or new ideas to make standard products attractive. In an essentially promotional industry such as ours, cooperation between technical and promotion divisions should be most intimate. As ease of communication increases, both benefit, so that even partially developed ideas can be nurtured to become profitable products.—*Abstract of T.G.A. paper by Joseph Kalish.*

Dispersion of Pigments in Lipstick

SWEATING of lipstick is a well recognized difficulty that exists in spite of the care that is exercised in the formulation and testing of lipsticks.

Comparison of various shades of the same type of lipstick narrows down the search for causes of sweating to investigation of pigment dispersions. Microscopic examination is the most powerful tool of it.

Uneven distribution of pigment particles and tendency to sweat are related. So microscopic examination of lipstick serves as means of forecasting stability.

Lack of uniformity of pigment dispersions is a result of incomplete wetting of pigment particles. Gas or vapour adsorbed on the surfaces of pigment particles is the barrier between the surrounding medium (oil) and the pigment, that retards wetting.

Gas from the surface of incompletely wetted pigment particles diffuses slowly in the lipstick mass. As lipstick is subjected to temperature changes that affect the equilibrium within the lipstick mass, expulsion of gas may take place.—*Abstract of T.G.A. paper by Mary Jakovics.*

Application of Gas Chromatography to Toilet Goods Analysis

THE use of the new technique of gas chromatography to analyze ingredients of cosmetics will be demonstrated. Gas chromatography analysis can be applied in anyone of several ways to analytical problems which heretofore could be solved only by very laborious standard chemical means. The technique can give a complete quantitative analysis suitable for quality control of materials. It can also be used to identify complex materials by simply comparing the total fractogram or "fingerprint" of the material as it appears on a recorder chart. It has the almost unique capacity of being able to detect adulterants and impurities in cosmetics materials even when the operator has no prior knowledge of the identity or quantity of these traces.

The instrument can also be used to prepare high purity samples of materials generally found only in complex mixtures. This enables the analyst to obtain small quantities of these rare materials for further study.

A short discussion of the actual instrumentation of gas chromatography will precede the demonstration of applications.—*Abstract of T.G.A. paper by Nathaniel Brenner.*



CONTENTS

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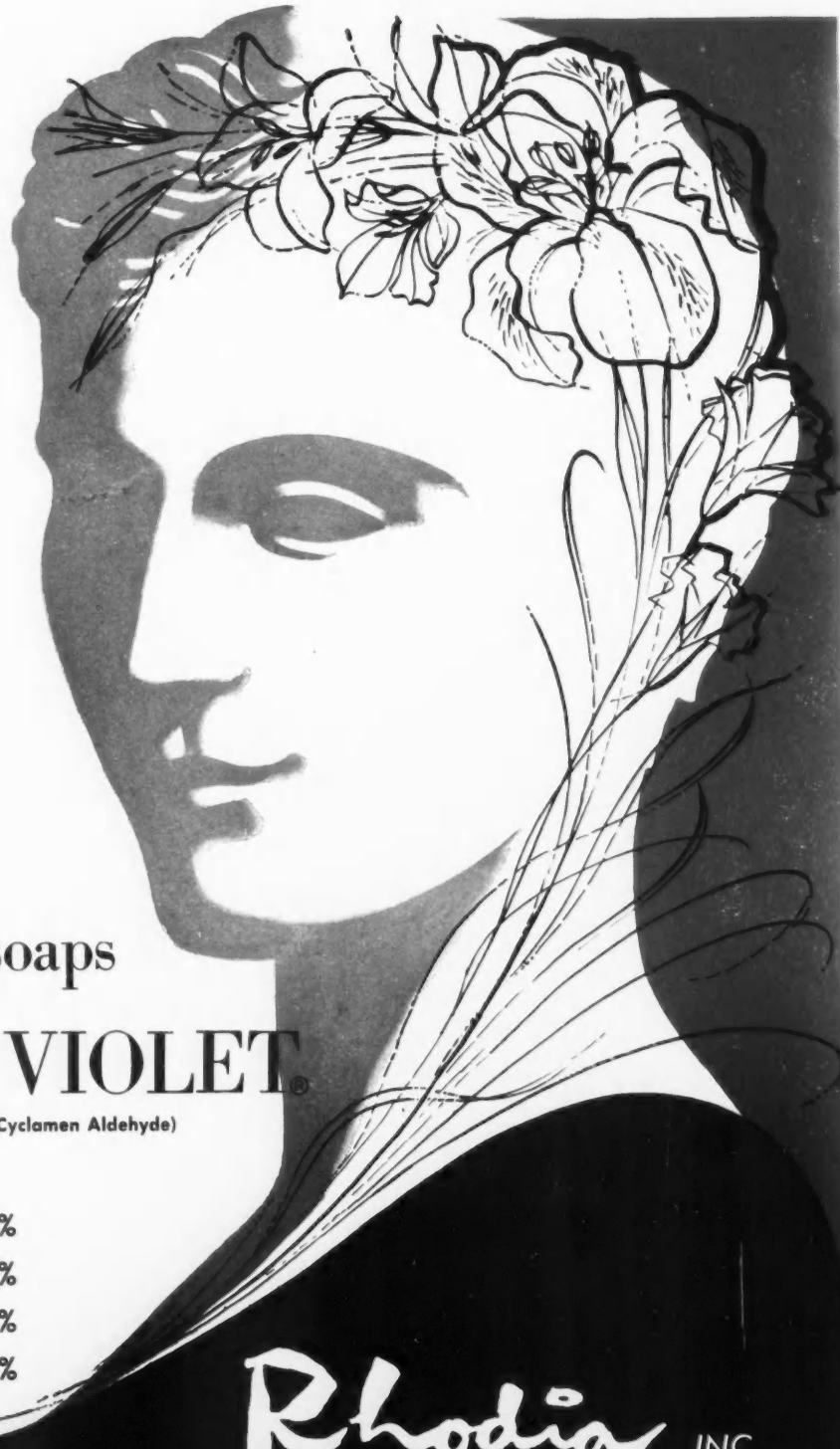
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News

and Events

Charles Radar Sales Manager of Connecticut Contract Packing Div.

Charles O. Radar has been appointed sales manager of the contract packaging division of the Connecticut Chemical Research Corp., Bridgeport, Conn., one of the largest contract packagers of aerosols in the United States. He is an alum-



Charles O. Radar

nus of Butler University and of the Indiana Business School. Mr. Radar was supervisor of the drug division of the Lever Bros. Co. for a number of years and sales promotion manager of the tar products and chemical division of the Koppers Co. in which capacity he supervised the contract packaging section. He has been associated with aerosol products since 1948 and was formerly sales manager of the Bridgeport Brass Co. aerosol division and of Bostwick Laboratories Inc. A. O. Samuels, president of the Connecticut Chemical Research Corp., states that the appointment of Mr. Radar is one of a number of steps being taken by the company to provide merchandising and sales services for the company's aerosol customers.

How to Make and Sell Cosmetics for the Large Negro Market

A large and attentive audience at the February 27 meeting of the New York Chapter of the Society of Cosmetic Chemists listened to two well informed speakers and witnessed a short film on the broad subject of the Negro market for cosmetics.

A. J. Morgan of the Apex Beauty Products Corp. discussed "Hair Care and

Processing for the Negro Market" and W. P. Grayson, eastern advertising manager of Ebony, a magazine for Negroes, spoke on "The Negro Market and Cosmetics." This was followed by a short

film on "The Secret of Selling the Negro" narrated by Robert Trout.

Chairman Warren B. Dennis Jr. presided with his usual skill so that the full program proceeded in an orderly and an interesting way.

Tom Fields Product Used in NBC Baseball Promotion

The National Broadcasting Co. spectacular, "Salute to Baseball," scheduled to be shown on April 13, will use a product of Tom Fields, Ltd., manufacturers of Tinkerbell Toiletries, as a major part of its pre-program publicity and promotion. More than 200 "Play Ball" packages, a combination of terry cloth mitt and baseball shaped soap, are being sent by the network to station directors and top stars in TV stations across the country.

INTERNATIONAL LABORATORY FOUNDED BY COLGATE-PALMOLIVE CO.



Dr. Alfonso M. Liquori

In order to foster long range research on the relationship of structure to the properties of chemical compounds, a laboratory has been established at the University of Rome by the Italian subsidiary of the Colgate-Palmolive Co., Palmolive S.P.A. At a reception to Dr. Alfonso M. Liquori, who with Dr. Giorando Giacomello of the University of Rome who will provide scientific leadership to the laboratory staff, President E. H. Little of the Colgate-Palmolive Co. pointed out that the idea of establishing a laboratory at an outstanding university abroad grew out of the company's favorable experience with co-operative research in the United States, notably at Rutgers University, where the company maintains laboratories similar to the one at the University of Rome.

At the reception in the Academy of Sciences, New York, February 21, to Dr.

Liquori who was recently appointed to the chair of chemistry at the University of Bari, it was learned that he is the youngest scientist who holds an academic chair in Italy, and has a remarkably distinguished record in several countries.

All instruments, equipment and supplies for the laboratory are furnished by the Italian subsidiary of Colgate-Palmolive Co. It also supplies the library with the specialized material required by the laboratory staff. In return the libraries of the University of Rome extend academic freedom to the Colgate-Palmolive group. The company gives complete financial support to the staff and activities of the laboratory. Dr. Arthur L. Fox, director of research of the company's central research and development department in Jersey City, N.J., laid the groundwork for the undertaking and is coordinating its program.

CHANEL, INC. WINS PACKAGING AWARD



The first prize for packaging of cosmetics was presented to Jean Helleu of Chanel, Inc. for the design of the Chanel "For the Purse" container. The award was made at the Package Designers Council Third National Awards Competition, at the Hotel Plaza, New York City, on February 15.

Similar awards were presented at the same time to all the firms that had con-

tributed to the manufacture of the winning package: Scovill Manufacturing Co., Carr-Lowrey Glass Co., Walter Jamieson Corp.; E. J. Trum, Inc.; and Armstrong Cork Co.

Gregory Thomas, president of Chanel, Inc., is seen receiving the award from Karl Fink, vice president of the Package Designers Council, while Edward Thornhill, Chanel purchasing agent, looks on.

SHULTON HOLDS ANNUAL LATIN AMERICAN SALES MEETING



Shulton, Inc. held its second annual Latin American sales meeting in Mexico City, Mexico on January 8-12. Attending were sales representatives and managers from Shulton subsidiaries throughout Latin America. The purpose of the meeting was to review the results obtained in 1956, the firm's most successful year, and to outline sales, promotion and advertising plans contemplated by Shulton for the year 1957.

Executives of the International Division who attended from New York included David Gregg, Jr., manager of the International Division; Frederic Rowe, sales manager; Claude Forter, advertising manager; John Hickling and James Hatton, assistants to the sales manager.

Seen above from left to right are Mr. Hatton; Mr. Gregg; Mr. Rowe; William O'Brien, Shulton Controller and Assistant Treasurer; and Mr. Hickling.

Nielsen Coupon Clearing House Is Permanently Established

Permanent establishment and expansion plans for the Nielsen Coupon Clearing House have been announced by the organization. The new service to manufacturers and retailers facilitates the handling and redemption of merchandise coupons. The decision to increase the scope of the operation follows several years of investigation of manufacturers' and retailers' needs, including a six-month test of the Coupon Clearing House. Coupons on more than 1,000 different products were encountered during the pilot test in which 700 representative chain and independent retailers in fourteen states cooperated.

Initial expansion will enable more than one thousand additional retailers who have already expressed a desire to join the plan to commence mailing their coupons to the Clearing House for payment.

Drug Information Bibliography In American Journal of Pharmacy

The Pharmaceutical Section of the Special Libraries Assn. is now publishing its bibliography, "Drug Information Sources," as a regular feature of the "American Journal of Pharmacy."

Chemical Raw Materials Cost Less than in 1952

Key chemical raw materials on the whole cost less now than they did in 1952, according to a five-year price study published by "Oil, Paint and Drug Reporter." Prices for mineral acids and some other products are about 15 to 20 percent above their 1952 levels, but these were more than offset by declines in large-volume organic chemicals. Alcohols, polyols, esters and ketones experienced decreases of some 20 to 30 percent, the study indicated. Although aromatic solvents advanced 5 to 20 percent in the five-year period, such important coal chemicals as phenol, naphthalene, cresols and cresylic acids slipped about 10 percent in price.

A. Boake, Roberts & Co. Gives Industry Party at Symposium

A. Boake, Roberts & Co., Ltd., London, England, gave a cocktail party for the perfume industry on November 30, the eve of the Paris perfumery symposium. Held at the Pavillon Dauphine in Paris, the function was well attended by leaders of the trade.

Among those present were Dr. Ernest Guenther; H. Robert, Bourjois, Inc.; Mr. Meunier, president of the French Society of Perfumers; Marcel Billot, Houbigant, Inc.; Dr. Ciarpaglini, Atkinson, Milan, Italy; Mr. Clemencet, Lenthéric, Paris; V. Roubert, Coty, Inc.

The technical press was represented by H. Janistyn, *Parfumerie und Kosmetik*; Mr. Littlejohn, *Perfumery & Essential Oil Record*; Mme. Molene-Dubosq, *Parfumerie de France*; Dr. Sebastien Sabetay, *Industrie de la Parfumerie*; and Louis Schmuck, *La Parfumerie Moderne*.

Study Finds Higher 1957 Sales Probable for Colgate-Palmolive

Some evidence that profit margins, which narrowed sharply in 1956, will widen in the current year on the basis of an improved competitive situation in soaps and toiletries, is found in a field report on Colgate-Palmolive Co. issued by the research department of Harris, Upham & Co., nationwide investment brokers.

"Domestic sales for 1956 should not be too much under the \$300,000,000 level, a small increase from 1955's \$285,600,000," the study finds. "Sales including those of foreign subsidiaries will be slightly below \$500,000,000 compared with \$468,578,000 in 1955. Foreign sales are growing at a faster rate than domestic sales and profit margins during 1956 should be considerably better than those in the United States.

Procter & Gamble Rated Best Managed Company

Procter & Gamble Co. has been cited as the best managed company in the United States, according to a special management audit just published by the American Institute of Management, a non-profit foundation devoted to the study and evaluation of business managements.

The Cincinnati company has appeared

COSMETIC CAREER WOMEN HOLD FEBRUARY LUNCHEON



The Cosmetic Career Women luncheon for February was held on February 6 at the Waldorf-Astoria Hotel, New York City. Speaker of the day was Mrs. Jane Strudwick, Four Roses Distilleries, who discussed "Women of Quality."


Shown are the committee members in charge of the luncheon, with the speaker. Left to right are Miss Norma Craig; Miss Neva Bradley; Miss Mary Anne Pfen-

ninger; Mrs. Strudwick, the speaker; Miss Eve Hendricksen; and Miss Margery Markley.

The annual Men's Day luncheon of the organization will be held on April 3 at the Waldorf-Astoria Hotel. P. B. Morehouse, Assistant General Counsel of the Federal Trade Commission, will discuss "Cosmetic Advertising" before the group at that time.

on the AIM's annual list of the ten best managed companies ever since the Institute first began issuing its comparative ratings seven years ago. But this is the

first time the Institute has ever revealed the top ranking company, and it has done so because a second audit confirms the findings on P&G of five years ago.



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SHULTON TO SPONSOR "CINDERELLA" SPECTACULAR



Shulton, Inc. will sponsor Rodger and Hammerstein's "Cinderella," a 90-minute color musical spectacular starring Julie Andrews of "My Fair Lady," on the evening of March 31 over CBS-TV. This is the first original production for television by the famous musical comedy team.

The special program is one of several spectacles which may be sponsored

this year by Shulton. The firm's television policy of sponsoring top quality programs began last year, when it was responsible for six of Edward R. Murrow's "See It Now" programs and two Victor Borge shows.

Above, George L. Schultz, president of Shulton, steps briefly into the role of Prince Charming backstage to toast Miss Andrews' success in fairy tale fashion.

Statute Drafted to Help Small Business Meet Price Cutting

A draft of a proposed statute to meet the marketplace problems which small business faces because of unrestrained price-cutting on trade-marked items has been completed and is now being examined by legal experts over the country, according to the Bureau of Education on Fair Trade. The new draft statute represents seven months of intensive legal research. Although not outlined in detail, a major consideration of the statute is to reduce to a minimum the difficulty and the high cost of enforcement of the present fair trade laws.

NBBMA Board of Directors Reports on Current Activities

A report has been issued by the Board of Directors of the National Beauty and Barber Manufacturers' Assn. on actions taken at a recent meeting in New York City.

The Board states that at that time twenty-nine NBBMA members has contributed \$7,451 to help finance 1957 National Beauty Salon Week, which was the week of February 10. An innovation this year was a 24-sheet poster in Times Square, New York City. Editorials on the Week were published in Vogue and Harper's Bazaar.

The association is supporting an all-industry beauty operator recruitment drive to encourage the enrollment of students in beauty culture schools.

Arrangements have been completed for the 1957 National Beauty Trades Show, to be held at the Hotel Statler, New York City, October 7-9.

The NBBMA Cold Wave Committee's statistical pool is under way, with fourteen manufacturers of professional cold wave lotions participating at an annual cost of \$75 each. Dun & Bradstreet, Inc. has been retained to gather and compile, each month, the following data from participating manufacturers:

Unit shipment data—total shipments of cold wave lotions for professional use by ounces to domestic customers (U.S.A. and territories).

Dollar shipment data—dollar volume of shipments of cold wave lotions and neutralizers for professional use.

The NBBMA Research Committee is considering types of projects to form the basis of an Association marketing research program.

Mennen Co. Co-sponsor of Elevation of Anticipation

More than one thousand expectant mothers attended a special three hour Lady-in-Waiting educational program at the Sheraton-Astor Hotel in New York

City in February. Initiated by Mennen Baby Products, and co-sponsored by Lane Bryant, the event launched a national promotion program to "put every Lady-in-Waiting on a pedestal where she belongs."

Highlight of the program was the unveiling of six maternity fashions designed exclusively for Mennen Baby Products by leading couturiers.

Cosmetic Contract Packaging Firm Organized in Canada

P. L. Packaging Ltd., 6 Vansco Road, Toronto, Canada, is prepared to manufacture, package, warehouse and ship any type of cosmetic or drug product, according to Ernest Johnston, president.

Mr. Johnston says that the plant is the newest, most modern in the Dominion, and equipped to manufacture according to the client's formulae and also to give technical assistance in the creation of new ones. Mr. Johnston was for many years plant superintendent for Whitehall Pharmaceutical Co.

Flower Arrangement Authority In "Quelques Fleurs" Promotion

J. Gregory Conway, international famous authority on floral arrangements, has been retained by Houbigant, Inc. for the spring promotion of its Quelques Fleurs line of toiletries. The new slogan-theme for the campaign is "the loveliest flower arrangement in fragrance." Mr. Conway, one of the top men in his field, has written three books on floral arrangement.

The promotion is taking two forms. One, a booklet illustrated in full color which depicts seven flower arrangements by Mr. Conway, and gives tips for duplicating them, is being attached to various items in the Quelques Fleurs line. The other is a series of twenty-eight lecture-demonstrations by Mr. Conway in twenty-four cities. The last page of the flower arrangement booklet is a ticket of admission to the lecture. Space is provided on it for the name and address of the owner so that it may be used for the drawing of door prizes.

Houbigant is giving heavy backing to the campaign. Stores will receive full merchandising kits of display and advertising suggestion, and Mr. Conway will be featured in photo-stories, television appearances and radio interviews in each of the tour cities. Special tie-ins are being arranged with Alfred A. Knopf, publisher of Mr. Conway's books; with the National Florists' Telegraph Assn.; numerous individual garden clubs; and other related interests.

Michigan Chemists Addressed on Army Reorganization

The February meeting of the Chemical and Allied Industries Assn. of Michigan was addressed at its February meeting by Brigadier General Lester S. Bork, U. S. Army Chief, Michigan Military District. He spoke on "Army Reorganization Due to Atomic Weapons."



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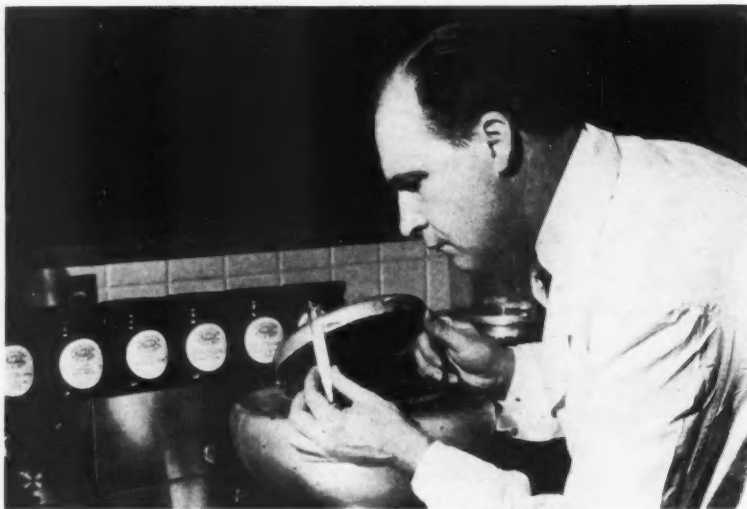
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CHICAGO SCC HEARS TALK ON LANOLIN AND THE SKIN



James Gianladis of the G. H. Packwood Manufacturing Co., St. Louis, Mo., spoke at the February meeting of the Chicago Chapter of the Society of Cosmetic Chemists, on "Lanolin and the Skin." Mr. Gianladis is the author of a technical book, "Lanolin the Fabulous Emollient," which is to be released shortly under the sponsorship of N. I. Malmstrom Co.

The cause and prevention of chapping were given prime consideration in his talk. He presented slides to illustrate the lecture in which he proposed a new concept of chapping in which the refrigerating effect caused by evaporating moisture on the skin after washing plays a key role. Chapping, he stated takes place when the moisture content in the outermost layer of skin, the corneal layer, dips below 10 per cent. Normally this moisture ranges between 10 and 25 per cent. Chapping conditions are present when the relative humidity is low, particularly during cold and windy months.

The skin's natural defense against moisture loss is served by what he termed the "sebaceous cloak." This cloak, he

explained, is made up of a mixture of all skin secretions. When this protective sebaceous cloak is stripped from the skin, as takes place when an individual washes dishes using one of the popular detergents, it requires an average of three hours for the cloak to reform. Washing the hands with a conventional bar soap removes approximately half of this protective cloak based on his laboratory findings. During the critical three hours in which the cloak is reforming, the skin is vulnerable and should be protected by a properly formulated lanolin cream or lotion.

Lanolin, he stated, is remarkably similar to the important skin secretions which form the "sebaceous cloak" and protect the skin from moisture loss. When the skin has been stripped of its cloak and has residual water on its surface, the evaporation of this water has a refrigerating effect which causes critical secretions to freeze in the skin's pores. These secretions are thus prevented from forming the "sebaceous cloak" which bathes the surface of the skin and so protects it from the loss of living skin moisture.

Tussy Announces Sales Staff Appointments

Tussy Cosmetics has announced the appointments of five territorial managers, four sales representatives and two women traveling representatives.

The new territorial managers are: George Barbat, southern Texas; William Chase, California from San Francisco south to Bakersfield; Vincent Doyle, Florida; Charles Nealis, western Pennsylvania and part of West Virginia; and John O'Leary, Michigan.

The new sales representatives are: Richard Davies, North and South Carolina; Ray Ridge, Indiana, Southern Ohio, West Virginia and Kentucky; Richard Schoch, Chicago marketing area; and Herman Leist, southern California.

Miss Mary Green of the Chicago area

and Miss Mae Trough of Ohio and Indiana have joined the company as traveling representatives.

Chicago SCC Addressed on Antibiotic Considerations

The March meeting of the Chicago Chapter of the Society of Cosmetic Chemists, which met on March 12, was addressed by William Burdell Baker on "Antibiotic Considerations in the Cosmetic and Allied Fields." He illustrated certain general requirements which must be satisfied before marketing products containing antibiotics.

Mr. Baker is associated with the Antibiotic Division of S. B. Penick and Co. He has a Master of Science Degree from the University of Maryland, School of Pharmacy.

New Developments in Aerosols Told to Perfumers' Society

Some of the latest facts and figures on new developments on containers and aerosols were explained to a large gathering of perfumers at the February 20 meeting of the American Society of Perfumers.

William Ryan of the Polychemicals Division of E. I. duPont de Nemours & Co. discussed the new Zytel (Nylon) bottles for the cosmetic industry by means of color slides, sample bottles and accompanying explanations.

Dr. Frank W. Blodgett and Michael Coppola of the Kinetic Chemicals Division of the company presented the latest data on aerosols. They also ran off a sound film on "The Spray is the Thing."

President Pierre Bouilletee, with his usual good humor welcomed the members and then certificates of membership were presented to new members. Dr. Paul G. I. Lauffer, chairman of the Symposium committee detailed plans for the third annual event March 20; and Dr. Oliver L. Marton outlined the course of evening lectures at the College of Pharmacy of St. Johns University, Brooklyn giving the subjects and the lecturers to be featured in the series.

Vice President A. J. Schwindeman chairman of the program committee introduced the speakers of the evening.

New Company to Make Eyebrow Pencils and Lip Brushes

The Atlantic Pencil Co., Inc., has been organized with Daniel Rotholz as president and Berman Hyman as vice president, to manufacture eyebrow pencils, lip liner pencils and lip brushes. Offices are at 152 East 23rd St., New York 10, N. Y. The company will also represent Brandwell Sales Co.

New Officers for National Assn. of Variety Stores

Frank A. Scharlott of St. Louis, Mo., one of the founders and for 13 years president of the National Assn. of Variety Stores, has been elected chairman of the board of the organization.

Other new officers of the organization are: Howard N. Blalock, president; C. A. Carlson, first vice president; Paul Lendzon, second vice president; Marvin E. Smith, executive vice president and secretary.

Weak Colors Mean Slow Sales Says Designer

"Weak colors mean unsold inventories, costly selling efforts, a slow-up of merchandising, a drain of profits," designer May Bender of Lane-Bender, Inc. told the Advertising Women of New York at a recent color forum held by the group. Mrs. Bender also advised that free reign for creative use of color is advisable for high fashion markets, but for mass markets she suggested more heed be paid to careful market research and analyses.

SPOTLIGHT

News...

Former Premier of France, Camile Chautemps, was the speaker at the 31st annual dinner of the Drug, Chemical & Allied Trades Section of the New York Board of Trade March 7 in the Waldorf Astoria hotel. His theme was "The Mid-East—Greatest Threat to Western Unity." The address was thoughtful and the record attendance which filled every available table in the grand ball room listened attentively.

A new bill to shift the burden of the cosmetic excise tax to manufacturers has been introduced in Congress by Rep. Daniel Reed. The bill HR 3864 provides for the collection of the tax by the government from manufacturers who would pass it on in the form of higher charges to their distributors.

The oldest church in the United States, St. Luke's near Smithfield, Va., which was built in 1632, is to be completely restored as a result of a substantial contribution to the restoration fund by William G. Mennen Jr., active head of the Mennen Co.

Imported cosmetics will be among 3000 exhibits from 43 nations participating in the United States World Trade Fair in the New York coliseum April 14-27.

Gillette Co. has absorbed Harris Research Laboratories, Washington, D. C., so as to broaden its research on all of its products including home permanent waves and other cosmetics manufactured by its subsidiary, the Toni Co.

Over 420,000,000 prescriptions were filled by 44,551 drugstores in the United States in 1954. Of these 167 million were refills. The figures are those of the U.S. Census Bureau.

Over 74% of teen-age boys and girls do not use deodorants, according to a survey by the Owens-Illinois Glass Co. As a result they constitute the greatest potential for increased sales of under-arm deodorants. In the adult male group it was found that 32% do not use deodorants. Women in the home are the largest group of deodorant users with a total percentage of 98.9.

Over 275 BIMS celebrated the 25th anniversary of the association at the Waldorf-Astoria, New York, February 28. Peter Forsman presided with his usual skill and Philip Heinle was toastmaster. A feature was the "treasurer's report" by Stephen L. Mayham. The Martin Schultes cup was awarded to Dr. E. G. McDonough. Charles Darr was called upon to blow out the 25 candles

on the anniversary cake. There were 25 old timers seated at a special table and on the rostrum. After the banquet a high order of professional entertainment was provided.

Pretty Feet, a new 30-second foot lotion which may be used to remove rough dry skin from the feet, elbows and hands, has been launched by Pretty Feet Inc., Philadelphia, Pa. The slogan of its initial advertising campaign is "You'll Walk on Air."

A new denture product is to be introduced shortly by Weco Products Co., makers of Dr. West's toothbrushes.

A new surfactant line under the name of Poly-Tergent is to be launched by the industrial chemicals division of Olin-Mathieson Chemical Corp., Baltimore, Md.

Net earnings of the Gillette Co. for the fiscal year 1956 amounted to \$31,500,000 after taxes.

Helena Rubinstein is reported to have had her portrait recently painted by the famous French artist, Pablo Picasso. Mme. Rubinstein's collection of modern art is noted among collectors.

Only half of the electric shaver owners use them regularly according to an extensive market research by the Mennen Co. The others believe they cannot get the close, clean shave they desire with an electric shaver. As a result the company has undertaken a large scale promotion to show that men will get better shaves by using its new product Mennen Electric Pre-Shave Lotion. New shavers will receive special attention.

A television visit to the Paris plant of Guerlain Inc. over a national network February 10 is said to be the first time a perfume factory in France has been televised.

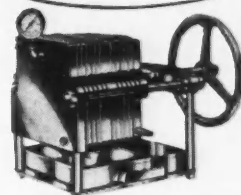
Management is rejecting the old notion that it is taboo to change packages, trademarks and labels. A. P. Bondurant of Glenmore Distilleries said recently. Decline on brand loyalty is influencing the change in thinking.

Hazel Bishop, Inc. is said to have suffered a net loss after tax refunds of \$610,259 for the fiscal year ended October 31, 1956. It was the second consecutive tax-loss year for the firm.

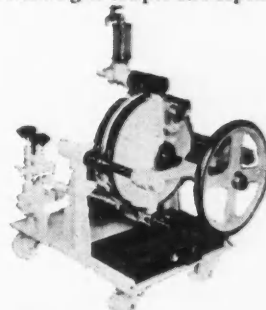
Carter Products, Inc. is using "the heaviest promotion ever placed behind any man's deodorant" to launch its new Arrid men's spray deodorant. The theme of the program is "Stops perspiration odor on contact."



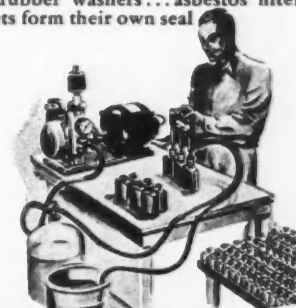
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MODEL 8 ESS—Excellent for filtration of perfumes, essential oils and other liquids. Made from stainless steel either cast or rolled stock, precision machined and highly polished. Easy to set-up, screens can be removed quickly and cleaning is simple and rapid.



MODEL 8BW—This filter is recommended for small batches where filter aid is required. Design eliminates need for rubber washers... asbestos filter sheets form their own seal.



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Will fill small or batch lots of material at lowest cost. Fills bottles to uniform height without loss of material. Various spouts for filling shaker-type bottles to gallons.

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COLLAPSIBLE TUBE WINS DESIGN AWARD



The design of a collapsible tube packaging Delfen, a product of the Ortho Pharmaceutical Co., recently won The Certificate of Merit of the Package Designers Council. In award presentation ceremony above are, l. to r.: John Meyer, Director of Advertising and Sales Promotion, Ortho Pharmaceutical; Gerald Stahl,

the Council's Competition Committee Chairman; W. Kyle Sheffield, Executive Vice-President of Sheffield Tube; Charles Magers, tube designer; Edward Madsen, Purchasing, Ortho Pharmaceutical; and Blaine Anderson, Products Director, Ortho Pharmaceutical.

Bourjois and Barbara Gould Present Training School

A training school was presented by Bourjois, Inc. and Barbara Gould, Inc. on February 6 in New York City. In addition to a discussion of the various lines manufactured by the two firms, the school covered promotional, adver-

tising and packaging plans for the spring and summer months.

Company executives and salesgirls from New York, New Jersey, and Long Island stores attended the all day meeting and luncheon.

SHULTON DEVELOPS NEW SYNERGIST



Dr. Lee Parker and Dr. Jim Hardwicke of Shulton, Inc., developed the commercial sesoxane process.

The Fine Chemicals Division of Shulton, Inc. has announced the development of a process for manufacturing a new synergist for pyrethrine and related insecticides. Sesoxane, as the material is called, is now being manu-

factured in pilot plant quantities. The company says that it is a superior synergist of special interest to formulators of insecticides which must be safe for use on grains and fruits, and in household and animal sprays.

Screw Caps to Canada Require New Marking

Lithographed or printed metal screw caps, lug caps and vacuum caps shipped to Canada must have the country of origin printed on the outer surface, the Department of National Revenue of Canada has advised Collectors of Customs and Excises.



Givaudan Honored

Mr. Xavier Givaudan, recently celebrated his ninetieth birthday, at which time he was the guest of honor at a reception given by members of the international plants who gathered in Geneva. On this occasion, he was honored by the Ambassador of France who, in the name of the President of the Republic, presented Mr. Givaudan with the Cravate of Commander of the French Legion of Honor.

SAACI Names Officers For the Year 1957

Vincent L. Rebak, Grace Chemical Co., was inducted recently as the 1957 president of the Salesmen's Assn. of the American Chemical Industry.

At the same installation in New York City Robert J. Roberts, took office as vice president; James E. Spencer as treasurer; and George W. Poland, Jr., as secretary.

Apologies for a Confusion of Names in Houbigant Promotion

Through an inadvertant mistake J. Gregory Thomas was named as the author of the free color booklet given by Houbigant Inc. to purchasers of its Quelques Fleurs Eau de Toilette Spray Mist during its extensive Spring promotion. Mr. Thomas was also referred to as the man who is to give lecture-demonstrations across the nation. The name should have been J. Gregory Conway. Our apologies are offered to Mr. Conway and to Houbigant Inc. and also to H. Gregory Thomas the well known president of Chanel Inc. who may have been embarrassed as a result of the unfortunate mistake.

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Oil of Bitter Orange N. F.
World's Largest Producer

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OIL OF ORANGE

OIL OF TANGERINE

OIL OF LEMON CAL.

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Representing

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MESSINA, ITALY

OIL OF MANDARIN

OIL OF LEMON

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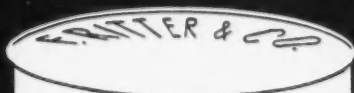
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chemicals used
as the active
ingredient in all types
of anti-perspirant products.

CREAMS
STICKS
SPRAYS
LOTIONS
GELS
POWDER



1

CHLORHYDROL

(aluminum chlorhydroxide complex)

For Cream, Lotion, Powder and Spray preparations—Available in 5 forms: Granular, fine, medium, impalpable, 50% W/W solution.

2

CHLORHYDROL S-5

(aluminum chlorhydroxide complex—modified)

For Gel preparations—In solid form for alcohol type...grease and gum free gels.

3

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(sodium aluminum chlorhydroxy lactate complex)

For Cologne-Stick preparations—Available as a 40% W/W solution for making cologne sticks.

SAFE . . . EFFECTIVE . . . EASY TO INCORPORATE

Reheis anti-perspirant chemicals offer all these advantages:

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- no buffering required

Write for free data and samples

3961



REHEIS COMPANY, INC.

Manufacturers of Fine Chemicals

BERKELEY HEIGHTS - NEW JERSEY



Harpo Marx is currently featured with his brother Chico in a series of commercials for Prom Home Permanent. The new commercials are seen on brother Groucho Marx's "You Bet Your Life" show on NBC-TV Thursday eves.

Lehn & Fink Join in Sickroom Needs Drive

Widespread institutional publicity directing the public to the drug store for sickroom supplies has been released in

connection with the 19th annual Lysol Sickroom Needs Drive, sponsored by the National Assn. of Retail Druggists and Lehn & Fink Products Corp.

The drive is conducted to increase the sales of sickroom needs items during the critical health months of the year; this is accomplished by alerting the public to the importance of keeping the home well stocked with drug store supplies used in the prevention of diseases, the emergency treatment of sudden illness or injury, and for the home care of the sick.

OBITUARY

Charles F. J. Noble

Charles F. J. Noble, credit manager of American Oil & Supply Co., died in February.

Edmund R. Commons

Edmund R. Commons, sales representative for Shulton, Inc., died suddenly on February 15. He had joined Shulton in 1944 and had serviced accounts in the Brooklyn and Long Island territories.

Mr. Commons was president of the Brooklyn Toilet Goods Assn., and a member of the Foragers Club.

Kathleen Mary Quinlan

Kathleen Mary Quinlan, who founded the cosmetic company bearing her name, which was later taken over by Natcon Industries Inc. died recently following a prolonged illness. In private life she was Mrs. Drew Dress.

Raymond W. Albright

Raymond W. Albright, vice-president and general manager of Distillation Products Industries, Rochester, N.Y., died February 19 in that city. He was sixty-two years of age.

George A. Adamson

George A. Adamson, retired treasurer of Colgate-Palmolive Co., died on February 7 in Coral Gables, Fla. He was eighty-two years old.

Kenneth W. Merkel, Sr.

Kenneth W. Merkel Sr. perfumer with Colgate-Palmolive Co. for 13 years and prior to that associated with the essential oil industry for 25 years died in Florida March 3 at the age of 61 years.

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RAW MATERIALS
For Perfumes & Flavors

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PERSONALITIES

Dr. Franklin T. Peters has been named assistant manager of the fine chemicals division of Shulton, Inc. Dr. Peters received his B.A. and M.A. degrees in



Dr. Franklin T. Peters

chemistry from Oberlin College, and his Ph.D. in organic chemistry from Yale University. In the past he has worked for Heyden Chemical Corp., Glyco Products Co., E. I. duPont de Nemours & Co.

Charles Pisano of Citrus and Allied Essential Oils Co. visited the firm's plant in the Dominican Republic in February for the installation of new equipment. The operation is in connection with expanded production of lime oil and of bitter orange oil.

William Hunnefeld, ex major league baseball star, who is president of Jean Nate Inc. and Mrs. Hunnefeld are enjoying a Florida vacation.

Charles Revson, head of Revlon, Inc. is soaking up sunshine in Florida.

J. C. Findlan has been advanced to the position of Sales Manager of the Geigy Industrial Chemical Division of Geigy Chemical Corp., Ardsley, New York.

William Tenney has been appointed middle west representative for Roger & Gallet. His headquarters are in Chicago.

John F. Connelly has been elected chairman of the board of Crown Cork & Seal Co., at its Board of Directors meeting. He is also the Chairman of the Executive Committee.

Leo V. Talamini has been appointed sales director for Anatole Robbins, Inc. He is making his headquarters in New York City. Before joining Anatole Robbins, Mr. Talamini had been executive vice president of Parfums Schiaparelli; vice president of Elizabeth Arden Sales Corp.; and executive vice president and general manager of Prince Matchabelli, Inc.

Joseph Salganik has resigned from Revlon Inc. to become executive vice president of Hazel Bishop Inc.

W. W. Pedrick, III, is the new production manager of the glass and closure division of Armstrong Cork Co. He had been manager of the Armstrong plant at Millville, N. J. since 1949. He replaces Roy A. Horning who is retiring after 42 years of service with Armstrong.

Maurice Cola, consulting chemist for Roure Bertrand Fils & Justin Dupont, Paris, France, who had not visited the United States for four years, was in this country last month for about two weeks, most of which time was spent in conference with officials of Roure-Dupont Inc., New York. Later Mr. Cola left for an



Maurice Cola

airplane trip to the principal cities of Latin America where he is well known. The trip will take about five months after which Mr. Cola will return to the United States before leaving for France. He expects to return to the United States in the early part of July.

Herbert Warne has joined Max Factor & Co. as assistant purchasing agent. Previously he was associated with North American Aviation, Inc., and Forty-Two Products & King's Men Ltd. He is a graduate of the University of California.

Michael J. Hickey has been appointed perfumer at the New Brunswick, N. J. plant of Rhodia, Inc. Formerly he was associated with Florasynth Laboratories.



Michael J. Hickey

Mr. Hickey is a graduate of Manhattan College, and he received the L.L.B. degree at Fordham University. He has been connected with the William J. Stang Co., E. I. Du Pont de Nemours & Co., and Fritzsche Brothers, Inc., during his years in the aromatics, food technology and flavor fields.

Orlo Wheaton has been elected vice president of the Wildroot Co.

Ira C. Kepford has been elected president of the Liggett Drug Co.

R. M. Classen of Vernier-Geneva, Switzerland, manager of sales for Germany of L. Givaudan & Cie., S. A., Germany, left the United States on March 2 after a two month visit. During his stay he acquainted himself with Givaudan operations in this country and studied American market conditions, and observed new trends in perfumery in America as well as marketing and advertising methods used here. Mr. Classen also reviewed new aromatic chemical developments with the Givaudan research staff and studied their possible application to the European market; and investigated the wide use of odor for industrial purposes as practiced in this country.

Dr. Paul C. Olsen, a member of the Faculty of the Philadelphia College of Pharmacy and Science for 35 years, was honored guest at the Mid-Winter Alumni Reunion Dinner there on February 23rd.

Robert W. Armstrong has been elected president and a member of the board of directors of Wertheimer Freres, Inc., international corporation in charge of distribution and sales of Chanel, Bourjois and Barbara Gould perfumes and cos-



Robert W. Armstrong

metics. He has been appointed concurrently to the board of directors of Chanel, Inc. Most recently he was executive director of Revlon International Corp.

Grover A. Whalen has been elected a director of Allied Industrial Research Consultants, Inc., and its wholly owned subsidiary, Allied Public Relations Associates. Currently Mr. Whalen is chairman of the board of Trans Continental Industries and Coty International Corp.

Eugene F. Hoffman has been named manager of the Cincinnati sales office of U. S. Industrial Chemicals Co.

M. Roger Godart-Bargy, vice president of the Lancome Sales Inc. and export manager of Lancome S.A., Paris, arrived in New York on February 1 for an extended stay in the United States. He is visiting key accounts throughout the country.

Orlo D. Wheaton has been named vice president in charge of plant operations of the Wildroot Co. He has been with the organization since 1920, and was named traffic manager in 1928 and plant man-

ager in 1945. The creation of the new position is the result of an expansion of manufacturing facilities.

Wentworth H. Barnes has been named vice president in charge of sales of R. R. Williams, Inc. He was formerly director of marketing and distribution for Charles Antell, Inc.

Paul deB. Scott has been promoted to assistant manager of the New York office of the Carr-Lowrey Glass Co. He joined the sales staff of the firm in 1929. He will continue his sales work in addition to his new responsibilities.

Miss Dorothy Carter has recently been appointed special representative and consultant for Alexandra de Markoff. She will visit department store accounts and train sales personnel throughout the United States.

Edmund Jackson, Jr., has been appointed sales promotion and assistant advertising manager for the Toilettries Division of Shulton, Inc. Former affiliations for Mr. Jackson include the Grey Advertising Agency and Vick Chemical Corp.

Madame Helena Rubinstein is making a six-week air tour of Australia, New Zealand, Japan and Hong Kong. She first started her business in Australia.

Edwin Diehl has been named public relations manager of Shulton, Inc. Prior to joining Shulton he was associated with P. Lorillard Co.

Arthur M. White has been named quality control director for Valve Corp. of America, Inc. He will be responsible for the firm's quality control program including application of statistical quality control, inspection personnel and vendor rating. He had previously been associated with Underwood Corp. and Norden Laboratory Corp.

S. H. Gould, vice president of the American Pharmaceutical Co., left on February 8 for an extended business trip to Central America, where he visited various Central American countries.

Henry K. Jarrett, who has served the cosmetic, pharmaceutical and allied trades in research, product development, plant lay-out and equipment and manufacturing for 20 years, and has pioneered in a number of new fields, announces that



Henry K. Jarrett

he has enlarged his laboratories in Kew Gardens, N.Y. Following his graduation from college Mr. Jarrett had experience under a leading German and a leading English chemist which led him to concentrate in the cosmetic and its allied fields. Among his achievements might be mentioned waterproof mascaras and make-ups for theatrical use; analytical study and adaptability of natural resins of the world; suspended fluid make-ups; hyper-allergenic lipsticks; skin absorption qualities of bases containing vitamins and hormones and the development of a lacquer for the preservation of armament and for moth-balling the fleet of the U. S. Navy. Lately he has been working on pressurized packaging. He has written numerous volumes of poetry, prose and translations from the ancient Greek, Latin, Medieval German, Spanish, French and Italian, and when he isn't engaged in literary work or in his laboratory, he spends his spare time developing his philatelic collection.

Lawrence J. Serkanic has been appointed chief of the protective coatings laboratory of Nuodex Products Co., a division of Heyden Newport Chemical Corp.

<p>ESSENTIAL OILS</p> <p>Boisoleone Jasmin de Provence B * Muguet Isoflor A</p>	<p>AROMATIC CHEMICALS</p> <p>Cassie Isoflor Jasmin Fleurs D Rose d'Orient #1</p>	<p>PERFUME SPECIALTIES</p> <p>Honeysuckle No. 500 Jonquille Isoflor Tuberose Isoflor</p>	<p>Jasmarome Lilas Isoflor B Violette de Provence</p>
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MARKET REPORT



Outside Influences Fail to Influence Sales ...

OUTSIDE influences which brought about a feeling of hesitancy in some lines failed to influence essential oil and aromatic chemical sales over the past month. February got off to a rather slow start but anticipated Easter holiday and

early spring needs served to take up the slack that set in immediately after the start of the new year because of the usual inventory period and first of the year adjustments, which always take place at this time.

resin industry, the long talked about drop in prices is likely to be noted. A reduction in prices had been anticipated at the start of the year. There has been a tendency on the part of refiners to maintain previous quotations in the hope of more pressing sales in the months ahead. Stocks are continuing at a high level of around 67 million pounds, or about a ninety day supply.

PRICE CHANGES

Advances

Oil geranium—
Algerian
Bourbon
Oil patchouli
Cocoa butter
Grease, white
Bromide, potassium

Current

\$14.75
15.25
6.25
.71
.08%
.40

Previous

\$14.00
14.25
6.00
.68
.08%
.38

Declines

Oil geranium (palmarosa)
Oil citronella, Formosan
Oil guaiacwood
Oil spearmint
Anethol, USP
Copra, coast, ton
Palm oil, tanks
Peanut oil, ref. tanks

\$6.75
1.35
1.25
4.25
1.65
150.00
.13 1/4
.19 1/4

\$8.25
1.50
1.65
4.50
1.85
156.50
.13 1/2
.20 1/4

Prices per pound unless otherwise specified.

GERANIUMS STEADIER—

A steadier tone developed in Algerian and Bourbon geranium oils following a rather sharp rise in prices. Trade observers believe that the hardening trend has about leveled off and that the market is likely to prove steadier from now on. Spot prices for Bourbon geranium moved up to \$15.25 to \$15.75 per pound while the Algerian variety rose to \$14.75 to \$15.25 per pound. Internal conditions in Algeria made for a feeling of uncertainty regarding replacements. The strength in Bourbon oil was attributed to fairly large buying orders for the account of European buyers.

ORANGE OIL STRONG—

Good demands and a continued tight supply situation in Californian cold-pressed oil made for general firmness in the orange oil market. Some distributors of Exchange oil received a slight increase in their quota allotments to contract customers covering the period January to July, but it was generally pointed out that they could sell a lot more oil if it was available. Orange is among the most popular flavors in the citrus oil group. Demands from confectioners and bottlers

have been constant and in steadily increasing volume.

OIL LEMONGRASS ACTIVE—

A good demand continued to be noted for oil lemongrass despite a feeling of uncertainty regarding the future trend of prices. Estimates regarding production earlier this year were rather high. Advices from the primary center state however that there should be sufficient stocks to take care of future requirements.

OIL SPEARMINT EASES—

Prices on oil spearmint lost ground over the past month with dealers offering spot goods at \$4.25 to \$4.75 per pound according to quantity. The decline did not reflect any spectacular change in the overall statistical position of the market. Trade observers attributed the decline to greater pressure to move material derived from the second cutting of the last mint crop. Stocks of high test oil remained generally on the light side.

CUT IN GLYCERIN LOOMS—

Unless there is a more decided pickup in demand, especially from the synthetic

ANETHOL LOWER—

Prices on USP., anethol were reduced by 20 cents per pound to the basis of \$1.65 to \$1.75. Base price of technical material remained at \$1.10. The general easing in USP., material was traced to a rather decided setback in export sales. China, according to reports, has been offering increasing quantities of anise oil in the European market which in turn cut into the heavy demand for anethol from this country.

TARTARIC ACID UNSETTLED—

The position in tartaric acid is rather unsettled, especially that in imported material. On a replacement basis, in the light of recent advances of 2¢ to 2 1/2¢ per pound in the principal producing countries, namely Italy, France, and Spain, imported acid should be selling here at minimum of 42¢ to 45¢ a pound. Some lots of imported are continuing to arrive from Germany which cost less because of Exchange deals. Until these goods are absorbed or completely disappear from the market, the situation in imported tartaric acid is likely to remain competitive.

TREND MIXED IN WAXES—

A mixed price trend was noted in vegetable waxes over the past month.

VANILLA BEANS QUIETER—

Trade in vanilla beans turned quieter at the close of last month, but the general outlook remains very firm. More than half of the new crop of beans in Madagascar was sold for the account of United States buyers about a month ago for May-June shipment. As the result of this activity, prices turned higher and toward the close of last month local dealers and importers were reluctant to name firm prices due to the uncertainty regarding additional replacements. New crop Mexican beans should soon be coming into the market. In view of recent advances in Bourbon beans, however, shippers in Mexico are reported holding goods for higher prices.



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Serving the Trade for 105 Years

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Ethyl Anthranilate • Butyl Anthranilate
Skatol
Linalyl Anthranilate • Linalyl Isobutyrate

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Cosmetics of any Descriptions
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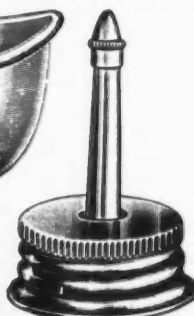


Crown Cap

6, 10, 13
15 mm Sizes



Aluminum Eye Bath Cup



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STAMPINGS**
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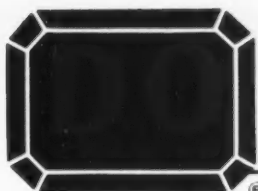
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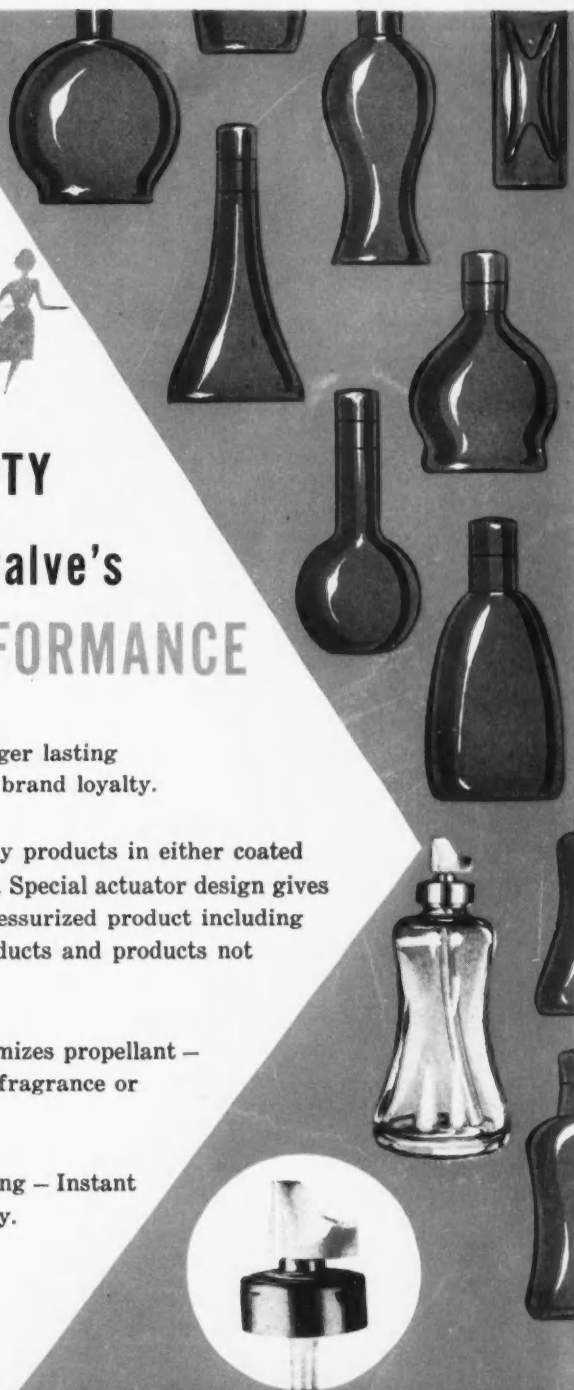
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